

FM 5055B LOT #1 *P.220*

D-09256

FINGERPRINT TEST DATA REPORT

NAS8-36298

COPY #21

# TABLE OF CONTENTS

## FILLER TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

Filler Lot for NASA Lot# 1

<u>TEST</u>	<u>PAGE</u>
1. Carbon Content.....	1
2. Ash Content.....	1
3. Atomic Absorption.....	1
3a. Moisture Content.....	1
3b. Ash Content.....	1
4. pH.....	1
5. Particle Size, S.E.M. procedure.....	1
6a. TGA, °C at 50% Loss.....	1
6b. TGA.....	2
7. Particle Size Distribution.....	2
7a. Particle Size, Horiba.....	2

## CHARTS

TGA.....	6A - 6C
Particle Size Distribution.....	7A - 7C



## FILLER TESTING

NAS8-36298

U.S. POLYMERIC O.E. 71108

Filler Lot for NASA Lot# 1

1. Carbon Content, % QAI-5560	SAMPLE			
	#1-1	#1-2	#1-3	
	99.17	99.10	99.12	
	NASA LOT# 1	AVERAGE	99.13	
2. Ash Content, % PTM-71B	.005	.000	.000	
	.009	.014	.005	
	AVG. .007	.007	.003	
	NASA LOT# 1	AVERAGE	.006	
3. Atomic Absorption, ppm CTM-53B (Values are average of 2 determinations)	#1-1	#1-2	#1-3	LOT#1
				AVG.
	Na 3.0	2.0	1.5	2.2
	K 1.5	0.0	0.0	0.5
	Ca 0.0	0.0	0.0	0.0
	Mg 0.5	0.0	0.0	0.2
	Li 0.0	0.0	0.0	0.0
	TOTAL 5.0	2.0	1.5	2.8
3a. Moisture Content, % CTM-53B	.005	.010	.005	
	.019	.005	.005	
	AVG. .010	.008	.005	
	NASA LOT# 1	AVERAGE	.008	
3b. Ash Content, % CTM-53B	0.000	0.000	0.000	
	0.000	0.000	0.005	
	AVG. 0.000	0.000	0.003	
	NASA LOT# 1	AVERAGE	0.001	
4. pH, Units ASTM D1512	4.85	4.85	4.95	
	4.90	4.90	5.05	
	AVG. 4.88	4.88	5.00	
	NASA LOT# 1	AVERAGE	4.92	
5. Particle Size, microns S.E.M. procedure (Average values are of 10 determinations)	AVG. .45	.36	.38	
	Maximum .65	.62	.85	
	Minimum .22	.17	.22	
	Std. Dev .08	.08	.08	
	NASA LOT# 1	AVERAGE SIZE	.40	
6a. TGA, °C at 50% Loss CTM-51	750	751	749	
	NASA LOT# 1	AVERAGE	750	

Filler Lot for NASA Lot# 1

6b. TGA  
CTM-51

See Charts 6A-6C

7. Particle Size Distribution  
CTM-72

See Charts 7A-7C

7a. Particle Size, microns  
CTM-72

	<u>#1-1</u>	<u>#1-2</u>	<u>#1-3</u>
	.87	.88	.92
	<u>.86</u>	<u>.95</u>	<u>.95</u>
AVG.	.86	.92	.94
NASA LOT# 1	AVERAGE		.91

U.S. Polymeric

*Hamid M. Quraishi*

Hamid M. Quraishi, Manager  
Quality Assurance Department



Sample: 1-1

Size: 8.84 mg

Run No: MIR #12830 (13)

Date: JAN/31/86 12:59

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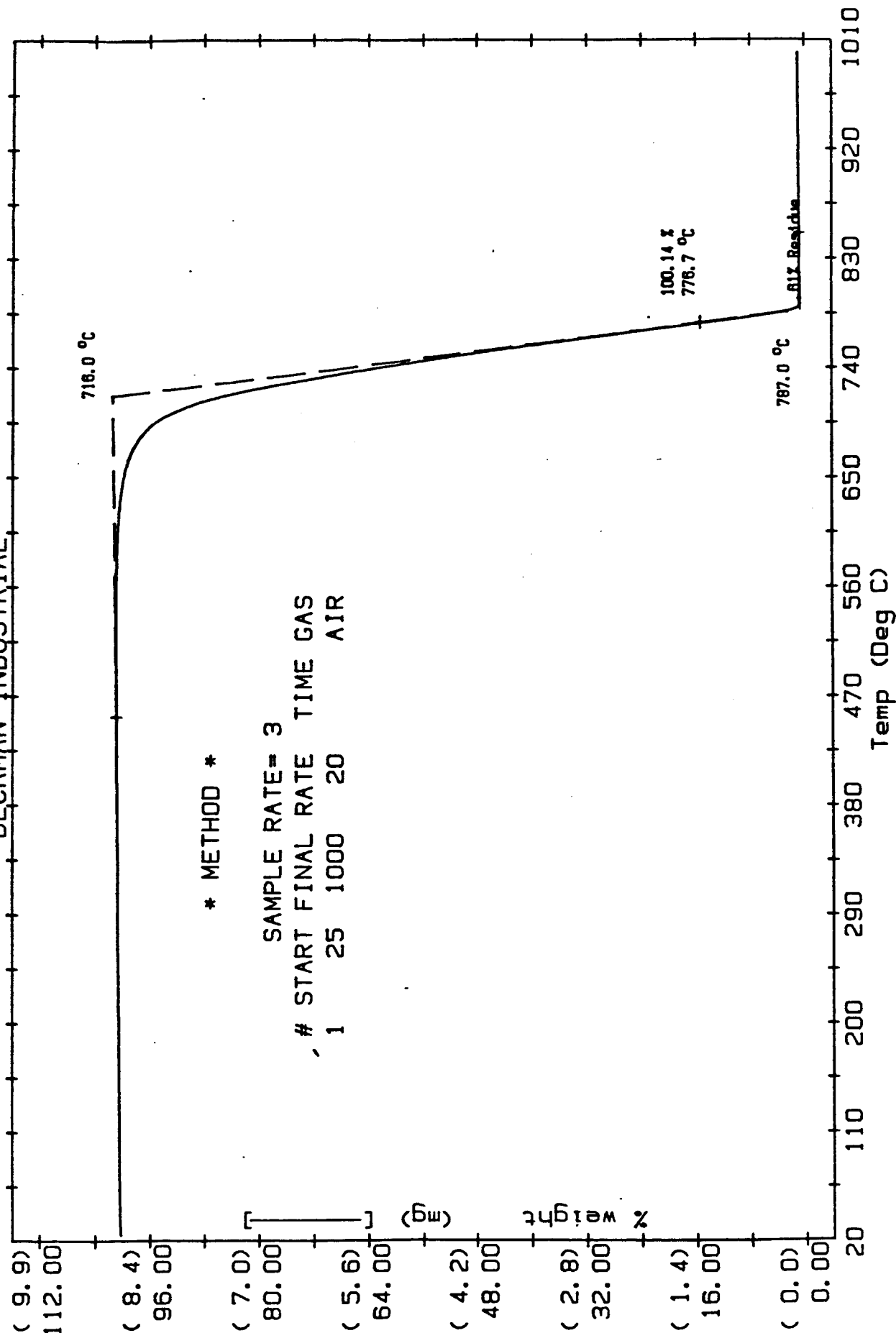
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Operator: M. WEGENER

Disk ID: DATA DISK #93

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Plotted: FEB/04/86 07:23

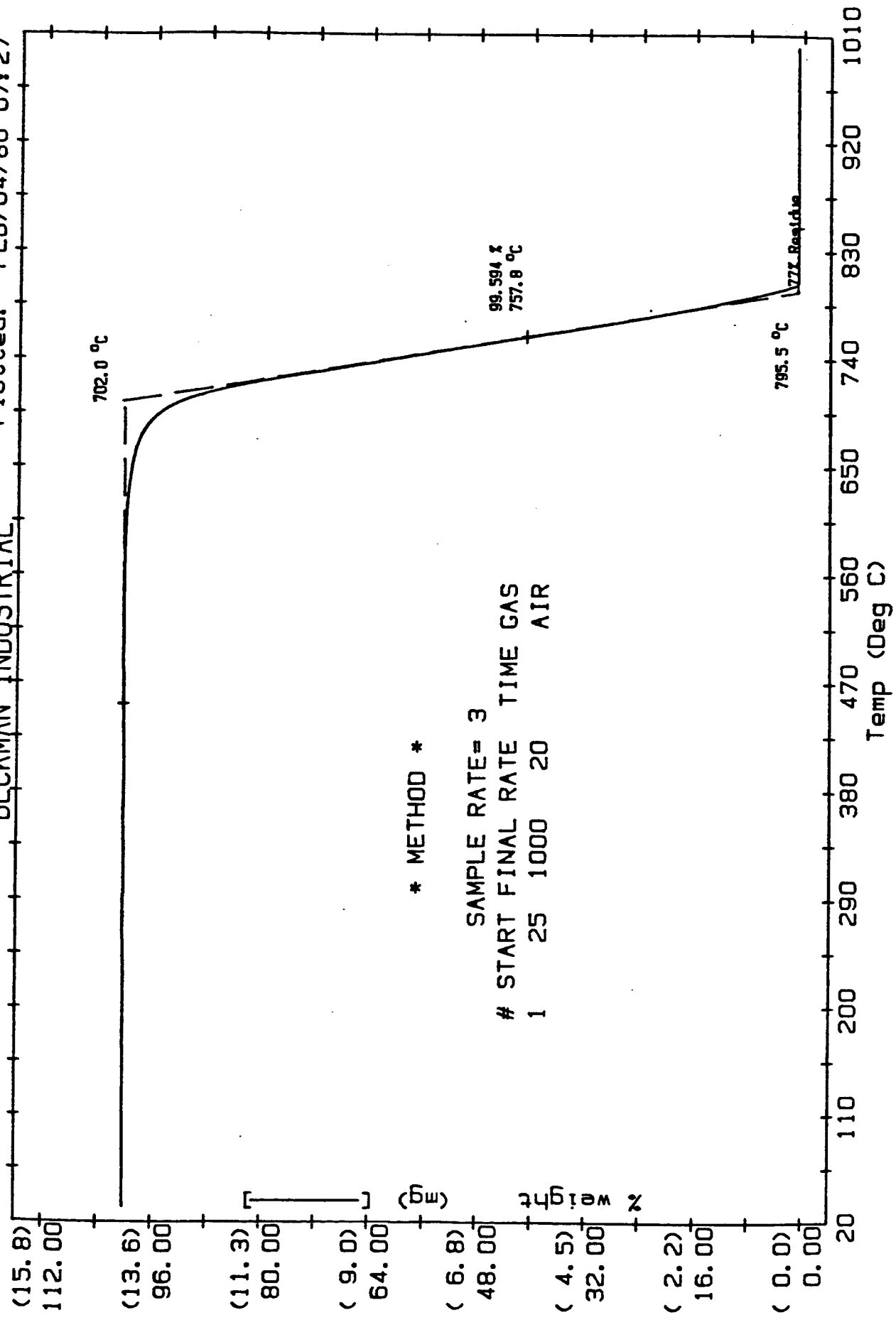
**Beckman Industrial™**

ANALYTICAL LABORATORY SERVICES

Sample: 1-2  
 Size: 14.192 mg  
 Run No: MIR #12830 (13)  
 Date: FEB/03/86 07:13  
 Operator: M. WEGENER  
 Disk ID: DATA DISK #93  
 File No: D 36.DAT V2.1  
 Plotted: FEB/04/86 07:27

# TGA

OMNITHERM DATA SYSTEM  
 BECKMAN INDUSTRIAL



Sample: 1-3

Size: 18.045 mg

Run No: MIR #12830 (13)

Date: FEB/03/86 08:45

TGA

OMNITHERM DATA SYSTEM

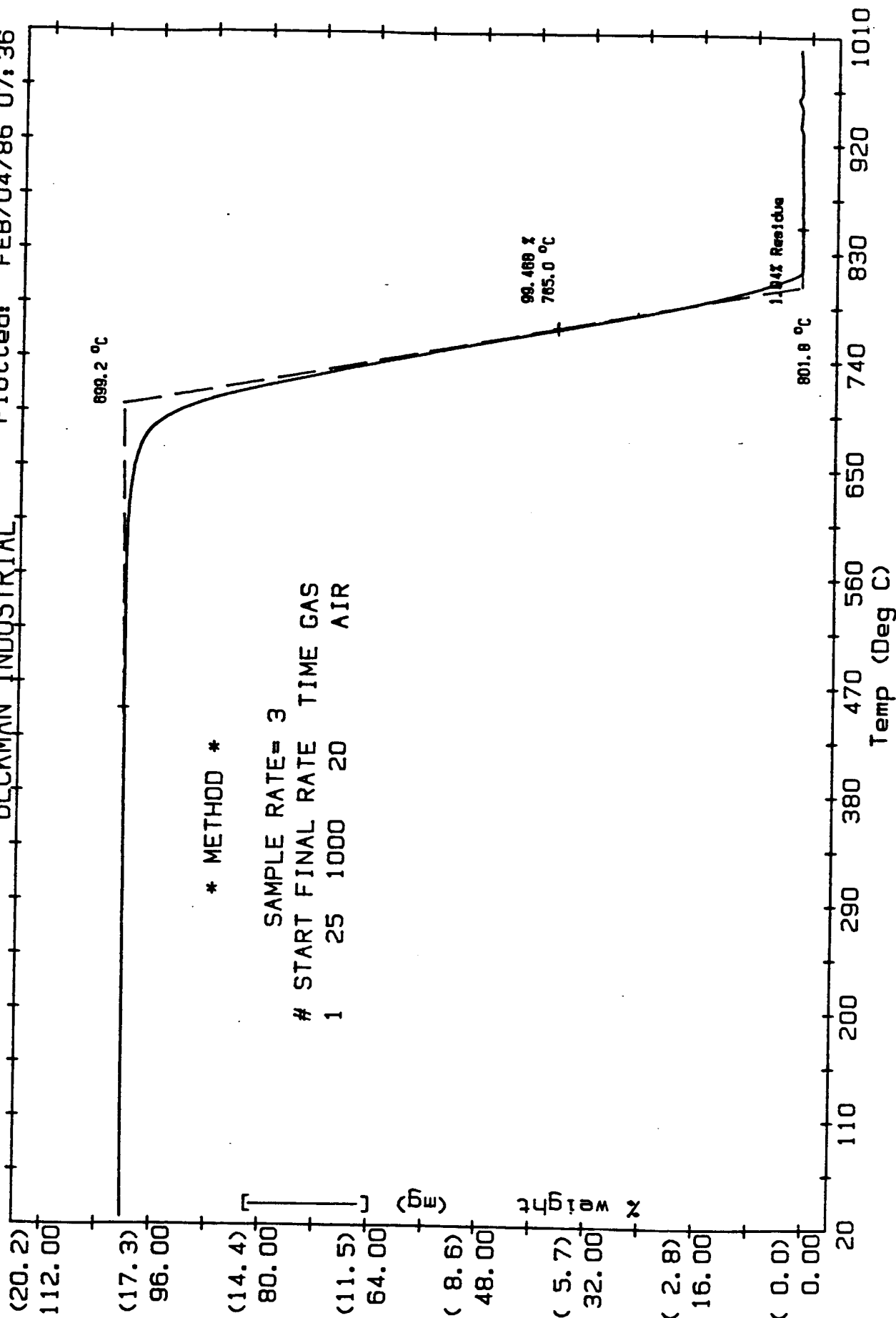
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Operator: M. WEGENER

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Plotted: FEB/04/86 07:36



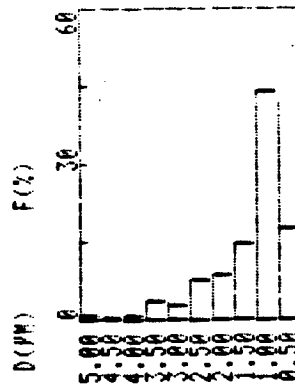
ANALYTICAL LABORATORY SERVICES

**Beckman Industrial™**

\* DISTRIBUTION TABLE (BY VOL.)

D(μM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.9	0.9
4.50-4.00	0.1	1.0
4.00-3.50	0.6	1.6
3.50-3.00	3.4	5.0
3.00-2.50	2.7	7.7
2.50-2.00	7.8	15.5
2.00-1.50	8.6	24.0
1.50-1.00	14.5	38.5
1.00-0.50	43.9	82.5
0.50-0.00	17.5	100.0
D(AVE)	0.87 (μM)	

\* DISTRIBUTION GRAPH (BY VOL.)



Lot #1-1  
Sample #1

HORIBA CAPA-500  
PARTICLE ANALYZER

#1  
DATE 5-22-86  
SAMPLE NASA LOT#1-1  
SOLVENT ETHYL GLYCOL  
C=0.013 mg/ml

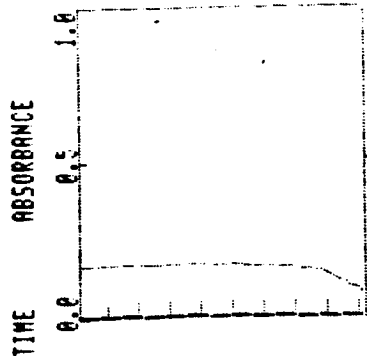
\* CONDITIONS

SOLV. VISC 19.90 (CP)  
SOLV. DENS 1.11 (G/CC)  
SAMP. DENS 1.90 (G/CC)  
D(MAX) 5.0 (μM)  
D(MIN) 0.01 (μM)  
D(DIV) 0.50 (μM)

SPEED 5000. (RPM)

\* TIME 0 H 11 MIN 31 SEC

\* DATA



HORIBA CAPA-500  
PARTICLE ANALYZER

#2  
DATE 5-22-86  
SAMPLE NASA LOT#1-1  
SOLVENT ETHYL GLYCOL  
C=0.013 mg/ml

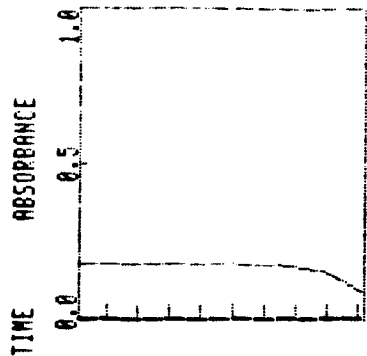
\* CONDITIONS

SOLV. VISC 19.90 (CP)  
SOLV. DENS 1.11 (G/CC)  
SAMP. DENS 1.90 (G/CC)  
D(MAX) 5.0 (μM)  
D(MIN) 0.01 (μM)  
D(DIV) 0.50 (μM)

SPEED 5000. (RPM)

\* TIME 0 H 11 MIN 31 SEC

\* DATA

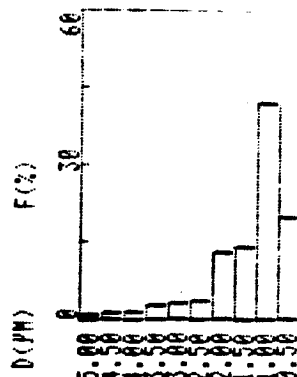


Lot #1-1  
Sample #2

\* DISTRIBUTION TABLE (BY VOL.)

D(μM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.7	0.7
4.50-4.00	1.1	1.8
4.00-3.50	1.4	3.3
3.50-3.00	2.5	5.7
3.00-2.50	2.7	8.4
2.50-2.00	3.6	12.0
2.00-1.50	12.8	24.8
1.50-1.00	13.9	38.7
1.00-0.50	41.7	80.4
0.50-0.00	19.6	100.0
D(AVE)	0.86 (μM)	

\* DISTRIBUTION GRAPH (BY VOL.)

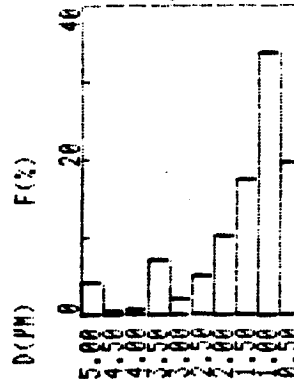


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\* DISTRIBUTION TABLE (BY VOL.)

D(µM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	4.1	4.1
4.50-4.00	0.2	4.3
4.00-3.50	0.4	4.8
3.50-3.00	7.1	11.9
3.00-2.50	1.9	13.8
2.50-2.00	4.8	18.7
2.00-1.50	10.3	29.0
1.50-1.00	17.5	46.5
1.00-0.50	33.8	80.3
0.50-0.00	19.7	100.0
D(AVE)	0.95 (µM)	

\* DISTRIBUTION GRAPH (BY VOL.)



Lot# 1-2  
Sample 02

HORIBA CAPA-500  
PARTICLE ANALYZER

DATE 5-24-86  
SAMPLE NASA Lot# 1-2  
SOLVENT ETHYL-GLYCOL  
C=0.01 mg/ml  
#2

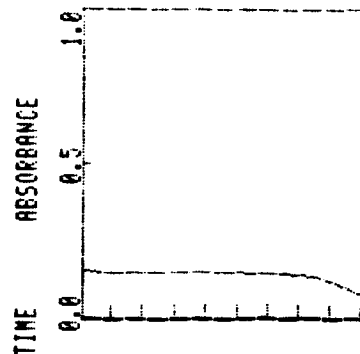
\* CONDITIONS

SOLV.VISC 19.90(CP)  
SOLV.DENS 1.11(G/CC)  
SAMP.DENS 1.90(G/CC)  
D(MAX) 5.0 (µM)  
D(MIN) 0.01(µM)  
D(DIV) 0.50(µM)

SPEED 5000. (RPM)

\* TIME 0 H 11 MIN 31 SEC

\* DATA

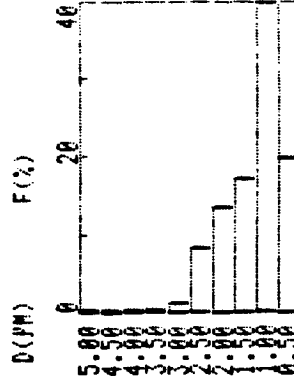


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\* DISTRIBUTION TABLE (BY VOL.)

D(µM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.0	0.0
4.50-4.00	0.0	0.0
4.00-3.50	0.0	0.0
3.50-3.00	0.0	0.0
3.00-2.50	1.1	1.1
2.50-2.00	8.2	9.3
2.00-1.50	13.7	23.0
1.50-1.00	17.2	40.2
1.00-0.50	39.9	80.1
0.50-0.00	19.9	100.0
D(AVE)	0.88 (µM)	

\* DISTRIBUTION GRAPH (BY VOL.)



Lot# 1-2  
Sample 01

HORIBA CAPA-500  
PARTICLE ANALYZER

DATE 5-24-86  
SAMPLE NASA Lot# 1-2  
SOLVENT ETHYL-GLYCOL  
C=0.01 mg/ml  
#1

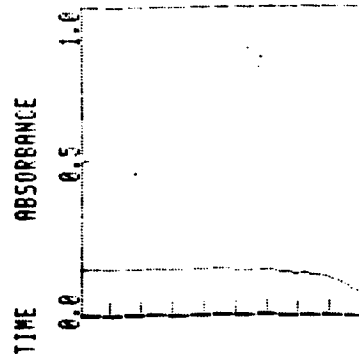
\* CONDITIONS

SOLV.VISC 19.90(CP)  
SOLV.DENS 1.11(G/CC)  
SAMP.DENS 1.90(G/CC)  
D(MAX) 5.0 (µM)  
D(MIN) 0.01(µM)  
D(DIV) 0.50(µM)

SPEED 5000. (RPM)

\* TIME 0 H 11 MIN 31 SEC

\* DATA



## \* DISTRIBUTION TABLE (BY VOL.)

D(µM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	1.6	1.6
4.50-4.00	7.3	9.0
4.00-3.50	0.0	9.0
3.50-3.00	0.0	9.0
3.00-2.50	3.6	12.6
2.50-2.00	5.7	18.3
2.00-1.50	11.0	29.3
1.50-1.00	16.6	45.9
1.00-0.50	37.2	83.1
0.50-0.00	16.9	100.0
D(AVE)	0.95 (µM)	

HORIBA CAPA-500

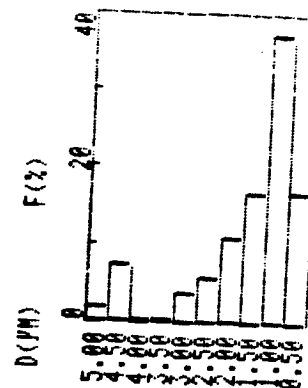
PARTICLE ANALYZER

DATE 5-24-86  
 #2 SAMPLE NASAL LOT# 1-3  
 SOLVENT ETHYL-GLYCOL  
 C=0.01 mg/ml  
 \* CONDITIONS

SOLV. VISC 19.90 (CP)  
 SOLV. DENS 1.11 (G/CC)  
 SAMP. DENS 1.90 (G/CC)  
 D(MAX) 5.0 (µM)  
 D(MIN) 0.01 (µM)  
 D(DIV) 0.50 (µM)

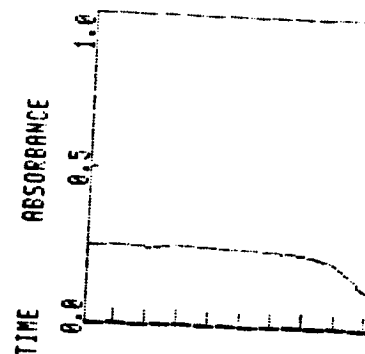
SPEED 5000. (RPM)

## \* DISTRIBUTION GRAPH (BY VOL.)

Lot#1-3  
Sample#2

\* TIME 0 H 11 MIN 31 SEC

\* DATA

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## \* DISTRIBUTION TABLE (BY VOL.)

D(µM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.0	0.0
4.50-4.00	0.0	0.0
4.00-3.50	2.1	2.1
3.50-3.00	4.0	6.0
3.00-2.50	1.5	7.5
2.50-2.00	5.8	13.3
2.00-1.50	9.2	22.5
1.50-1.00	20.8	43.3
1.00-0.50	40.4	83.7
0.50-0.00	16.3	100.0
D(AVE)	0.92 (µM)	

HORIBA CAPA-500

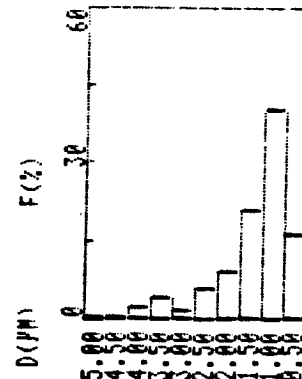
PARTICLE ANALYZER

DATE 5-24-86  
 #1 SAMPLE NASAL LOT# 1-3  
 SOLVENT ETHYL-GLYCOL  
 C=0.01 mg/ml  
 \* CONDITIONS

SOLV. VISC 19.90 (CP)  
 SOLV. DENS 1.11 (G/CC)  
 SAMP. DENS 1.90 (G/CC)  
 D(MAX) 5.0 (µM)  
 D(MIN) 0.01 (µM)  
 D(DIV) 0.50 (µM)

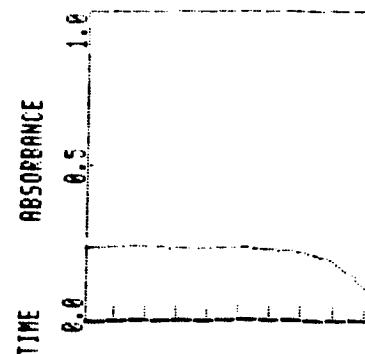
SPEED 5000. (RPM)

## \* DISTRIBUTION GRAPH (BY VOL.)

Lot#1-3  
Sample#1

\* TIME 0 H 11 MIN 31 SEC

\* DATA



## TABLE OF CONTENTS

### RESIN TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

9ILD Resin Lot for NASA Lot# 1

<u>TEST</u>	<u>PAGE</u>
1. Resin Solids.....	1
2. Specific Gravity.....	1
3. Brookfield Viscosity.....	1
4. Gel Time.....	1
5. Atomic Absorption.....	1
6. Gas Chromatography.....	1
7. TGA.....	1
8. DSC.....	1
9. HPLC.....	1
10. GPC.....	1
11. pH.....	2
12. Phenol Content.....	2
13. Chang's Index.....	2
14. RDS.....	2
15. NMR.....	2

### CHARTS

Gas Chromatography.....	6A - 6C
TGA.....	7A - 7C
DSC.....	8A - 8C
HPLC.....	9A - 9C
GPC.....	10A - 10C
RDS.....	14A - 14C
NMR.....	15A - 15C



## RESIN TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

91LD Resin Lot for NASA Lot# 1

1. Resin Solids, % PTM-7C		<u>#1-1</u> 70.4 70.9 <u>71.0</u> AVG. 70.8	<u>#1-2</u> 70.7 69.9 <u>71.7</u> 70.8	<u>#1-3</u> 71.5 70.9 <u>70.3</u> 70.9	LOT# 1 AVERAGE 70.8
2. Specific Gravity @ 25°C PTM-29C		1.137	1.136	1.137	LOT# 1 AVERAGE 1.137
3. Viscosity, Brookfield, cps. @ 22.8°C PTM-47B		1000	1000	1000	LOT# 1 AVERAGE 1000
4. Gel Time, min:sec PTM-14C		3:24	3:20	3:22	LOT# 1 AVERAGE 3:22
5. Atomic Absorption, ppm CTM-53B		<u>#1-1</u>	<u>#1-2</u>	<u>#1-3</u>	<u>LOT1 AVG</u>
	Na	8	9	10	9.0
	K	1	1	1	1.0
	Ca	10	9	8	9.0
	Mg	1	1	1	1.0
	Li	0	0	0	0
	AVG.	20	20	20	20.0
6. Volatiles, Gas Chromatography CTM-55		See Charts 6A-6C			
7. TGA, % Weight Loss at 500°C CTM-51 (AIR)		<u>#1-1</u> 41.4	<u>#1-2</u> 40.5	<u>#1-3</u> 40.8	LOT# 1 AVERAGE 40.9
		See Chart 7A-7C			
8. DSC, temperature °C CTM-50A		187	182	183	LOT# 1 AVERAGE 184
		See Chart 8A-8C			
9. HPLC CTM-49A		See Chart 9A-9C			
10. GPC, Average molecular wt. CTM-49A		1770	1816	1658	LOT# 1 AVERAGE 1748
		See Chart 10A-10C			



91LD Resin Lot for NASA Lot# 1

11. pH, units CTM-1B	<u>#1-1</u> 8.4	<u>#1-2</u> 8.3	<u>#1-3</u> 8.3
	LOT# 1	AVERAGE	8.3
12. Phenol Content, % CTM-55 Appendix 1	11.05	12.15	11.85
	<u>11.05</u>	<u>11.78</u>	<u>12.02</u>
AVG.	11.05	11.96	11.93
	LOT# 1	AVERAGE	11.65
13. Chang's Index, ml. CTM-5B	23.6	23.8	23.8
	LOT# 1	AVERAGE	23.7
14. RDS, Minimum Viscosity, cps. CTM-57A	<u>Min. Visc.</u>	<u>°C</u>	
	#1-1	356	99
	#1-2	194	104
	#1-3	153	108
AVG.	234		104
	See Charts 14A-14C		
15. NMR Vendor procedure	See Charts 15A-15C		

U. S. Polymeric

*Hamid M. Quraishi*Hamid M. Quraishi, Manager  
Quality Assurance Department

# TYPICAL GAS CHROMATOGRAPH SET-UP

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Operator <u>J. A. Z.</u>	Date <u>12/10/86</u>
Column <u>6 ft.</u>	Detector <u>FID</u>
Length <u>6 ft.</u>	Voltage <u>        </u>
Dia. <u>1/4 in.</u>	Sensit. <u>        </u>
Liquid Phase <u>AT-1000</u>	Flow Rates, ml/min <u>        </u>
Wt. % <u>0.1</u>	Hydrogen <u>60</u> Air <u>90</u>
Support <u>GRAPH-PAC</u>	Scavenge <u>        </u>
Mesh <u>80/100</u>	Split <u>        </u>
Carrier Gas <u>He</u>	Temperature, °C <u>        </u>
Rotameter <u>        </u>	Det. <u>220</u> Inj. <u>200</u>
Inlet Press <u>60</u> psig	Column Initial <u>60</u>
Rate <u>30</u> ml/min	Final <u>210</u>
CHART SPEED <u>        </u>	Rate <u>5°C/MIN</u>
SAMPLE <u>911D, I-1</u>	Solvent <u>THF</u>
Size <u>0.1 µl</u>	Concn. <u>0.09976 g/ml</u>

## GAS CHROMATOGRAPHY STANDARD SOLVENT

TEST METHOD CTM-55

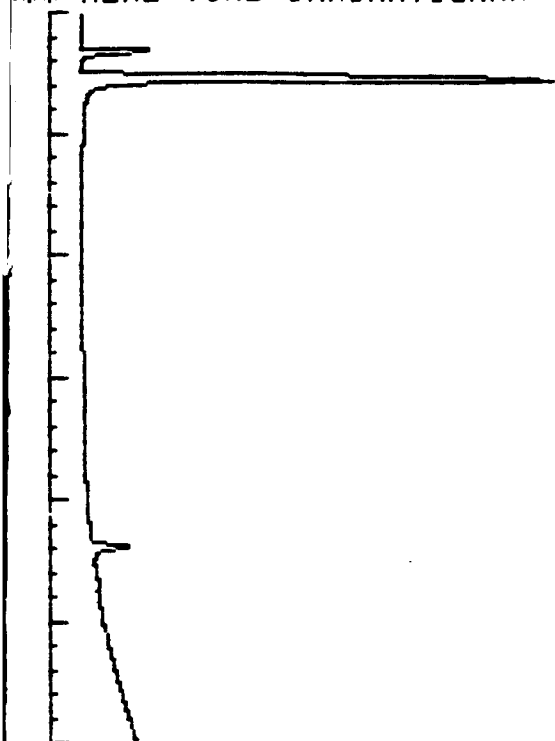
### STANDARD SOLVENT/MONOMER

### RETENTION TIME (MINS.)

MEOH	.6
ETHANOL	1.18
MECL2	1.28
ACETONE	1.45
IPA	1.83
THF	3.08
ACETONITRILE	3.2
CRESOL	4.03
MEK	4.08
FURFURAL	15.03
TOLUENE	17.98
CHLOROBENZENE	19.6
PHENOL	22.08

NOTE: THF WAS USED TO DILUTE THE RESIN SAMPLES.

## \*\* REAL TIME CHROMATOGRAM \*\*



FINAL FULL SCALE MV.=1000.00

SAMPLE: 91 LD 1-1  
 MISC.: C=0.09976 GMS/ML

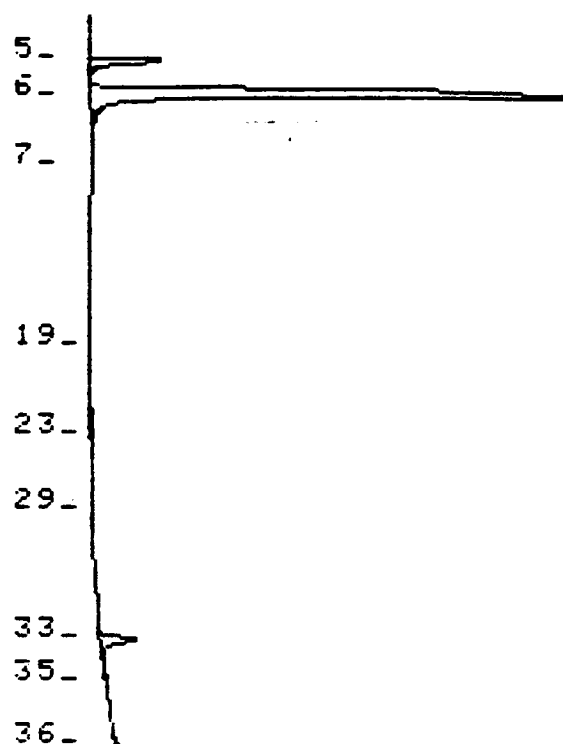
TIME: 8:39  
 DATE: 12/10/86  
 OPERATOR: JGZ

RUN TIME: 30.00 MINUTES  
 DELAY TIME: 0.00  
 CHAN: 0

PK NO.	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
2	.48	1782	.084	2	243
3	.63	2116	.100	2	244
5	1.63	177020	8.334	2	12801
6	2.93	1802100	84.843	3	88912
7	5.43	1577	.074	4	102
19	11.70	1138	.054	2	55
23	14.90	9570	.451	2	193
29	17.48	1551	.073	1	69
33	21.98	116130	5.467	3	6607
35	23.50	8647	.407	2	319
36	25.70	2417	.114	1	109

TOTAL AREA= 2124047  
 THRESHOLD= 1  
 MIN. PK. WIDTH= 15  
 AREA REJECT= 1000

## VERTICAL SCALE FACTOR: 1X



SAMPLE: 91 LD 1-1  
 MISC.: C=0.09976 GMS/ML

TIME: 8:39  
 DATE: 12/10/86  
 OPERATOR: JGZ

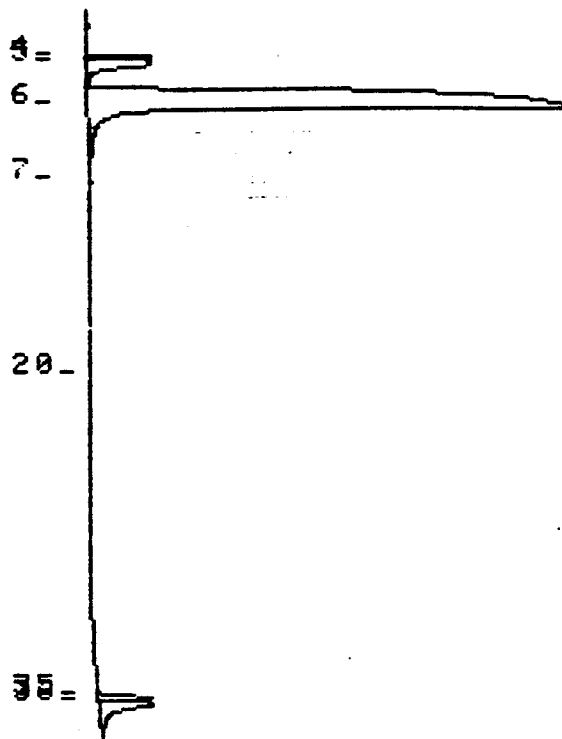
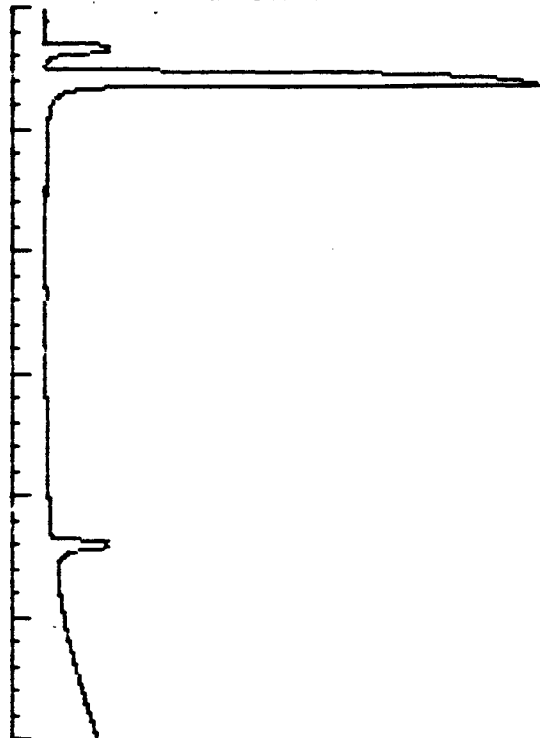
RUN TIME: 30.00 MINUTES  
 DELAY TIME: 0.00  
 CHAN: 0

PK NO.	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
5	1.63	177020	8.449	2	12801
6	2.93	1802100	86.009	3	88912
33	21.98	116130	5.543	3	6607

TOTAL AREA= 2095250  
 THRESHOLD= 1  
 MIN. PK. WIDTH= 15  
 AREA REJECT= 10000

VERTICAL SCALE FACTOR: 1X

\*\*\* REAL TIME CHROMATOGRAM \*\*\*



FINAL FULL SCALE MV.=1000.00

SAMPLE: 91 LD 1-2  
MISC.: C=0.10038 GMS/ML

TIME: 10:03  
DATE: 12/10/86  
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES  
DELAY TIME: 0.00  
CHAN: 0

PK NO	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
2	.63	4647	.117	1	480
4	1.65	94019	2.358	2	12190
5	1.85	222740	5.585	2	12322
6	3.28	3332000	83.551	3	93330
7	5.55	2614	.066	4	253
20	11.73	8087	.203	3	381
35	21.93	133490	3.347	2	10616
36	22.13	190400	4.774	2	10542

TOTAL AREA= 3987997  
THRESHOLD= 1  
MIN.PK.WIDTH= 15  
AREA REJECT= 1000

SAMPLE: 91 LD 1-2  
MISC.: C=0.10038 GMS/ML

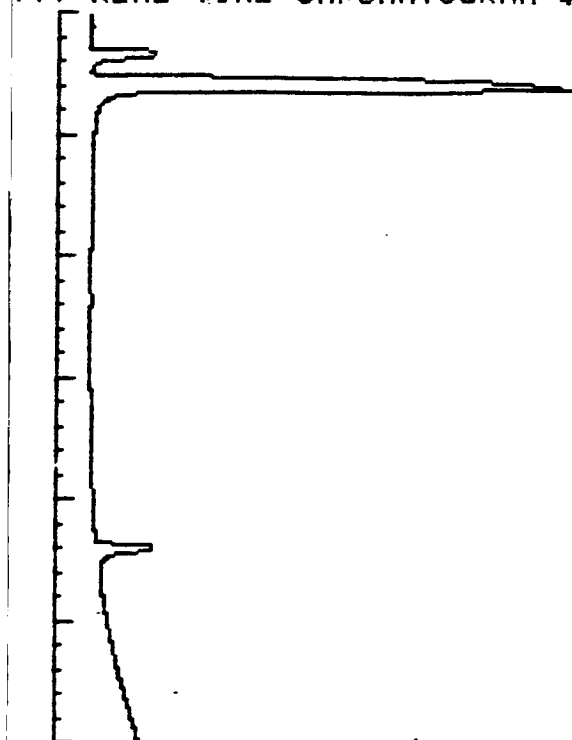
TIME: 10:03  
DATE: 12/10/86  
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES  
DELAY TIME: 0.00  
CHAN: 0

PK NO	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
4	1.65	94019	2.367	2	12190
5	1.85	222740	5.607	2	12322
6	3.28	3332000	83.874	3	93330
35	21.93	133490	3.360	2	10616
36	22.13	190400	4.793	2	10542

TOTAL AREA= 3972649  
THRESHOLD= 1  
MIN.PK.WIDTH= 15  
AREA REJECT= 9000

## \*\*\* REAL TIME CHROMATOGRAM \*\*\*



FINAL FULL SCALE MV.=1000.00

SAMPLE: 91 LD 1-3  
 MISC.: C=0.10171 GMS/ML

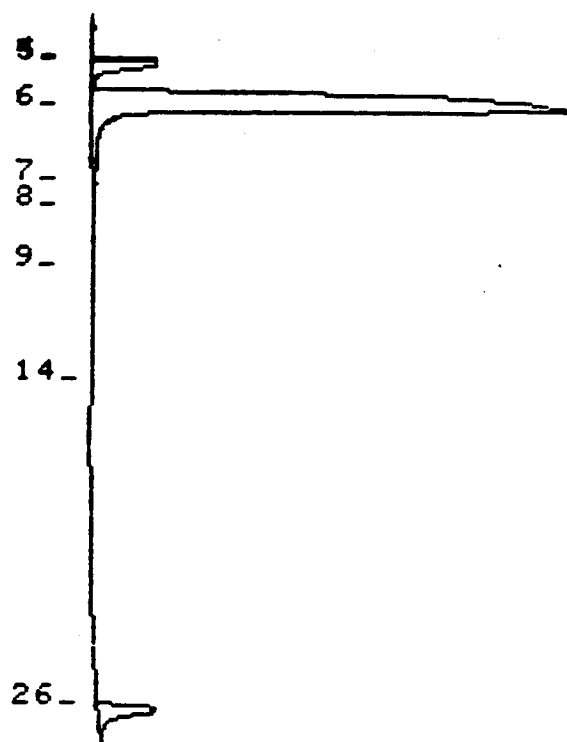
TIME: 11:03  
 DATE: 12/10/86  
 OPERATOR: JGZ

RUN TIME: 30.00 MINUTES  
 DELAY TIME: 0.00  
 CHAN: 0

PK NO.	RET TIME	PEAK AREA	AREA B %	L	PEAK HT.
2	.63	3122	.084	1	415
4	1.65	87108	2.345	2	12047
5	1.80	206610	5.563	2	12134
6	3.23	3107700	83.669	3	90515
7	5.55	15030	.405	4	386
8	6.35	16422	.442	4	280
9	8.23	1731	.047	4	84
14	11.80	4421	.119	2	206
26	21.98	272120	7.326	1	10481

TOTAL AREA= 3714264  
 THRESHOLD= 1  
 MIN. PK. WIDTH= 15  
 AREA REJECT= 1000

## VERTICAL SCALE FACTOR: 1X



SAMPLE: 91 LD 1-3  
 MISC.: C=0.10171 GMS/ML

TIME: 11:03  
 DATE: 12/10/86  
 OPERATOR: JGZ

RUN TIME: 30.00 MINUTES  
 DELAY TIME: 0.00  
 CHAN: 0

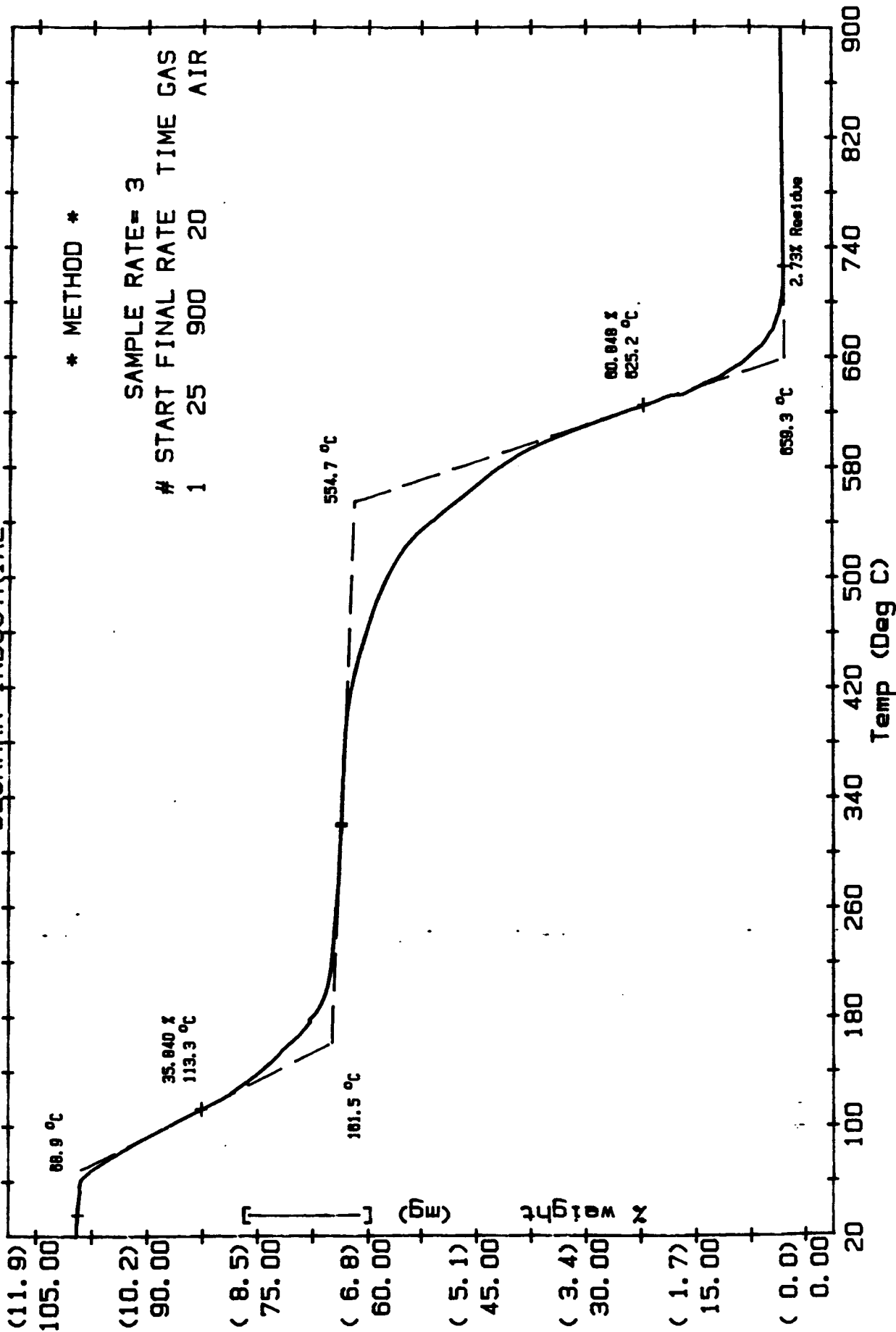
PK NO.	RET TIME	PEAK AREA	AREA B %	L	PEAK HT.
4	1.65	87108	2.371	2	12047
5	1.80	206610	5.624	2	12134
6	3.23	3107700	84.597	3	90515
26	21.98	272120	7.408	1	10481

TOTAL AREA= 3673538  
 THRESHOLD= 1  
 MIN. PK. WIDTH= 15  
 AREA REJECT= 17000

Sample: 71108 1-1  
 Size: 11.357 mg  
 Run No: MIR #13063 (12)  
 Date: MAY/13/86 12:49

TGA  
 OMNITHERM DATA SYSTEM  
 BECKMAN INDUSTRIAL

Operator: M. WEGENER  
 Disk ID: DATA DISK #106  
 File No: D 40.DAT V2.1  
 Plotted: MAY/14/86 13:49



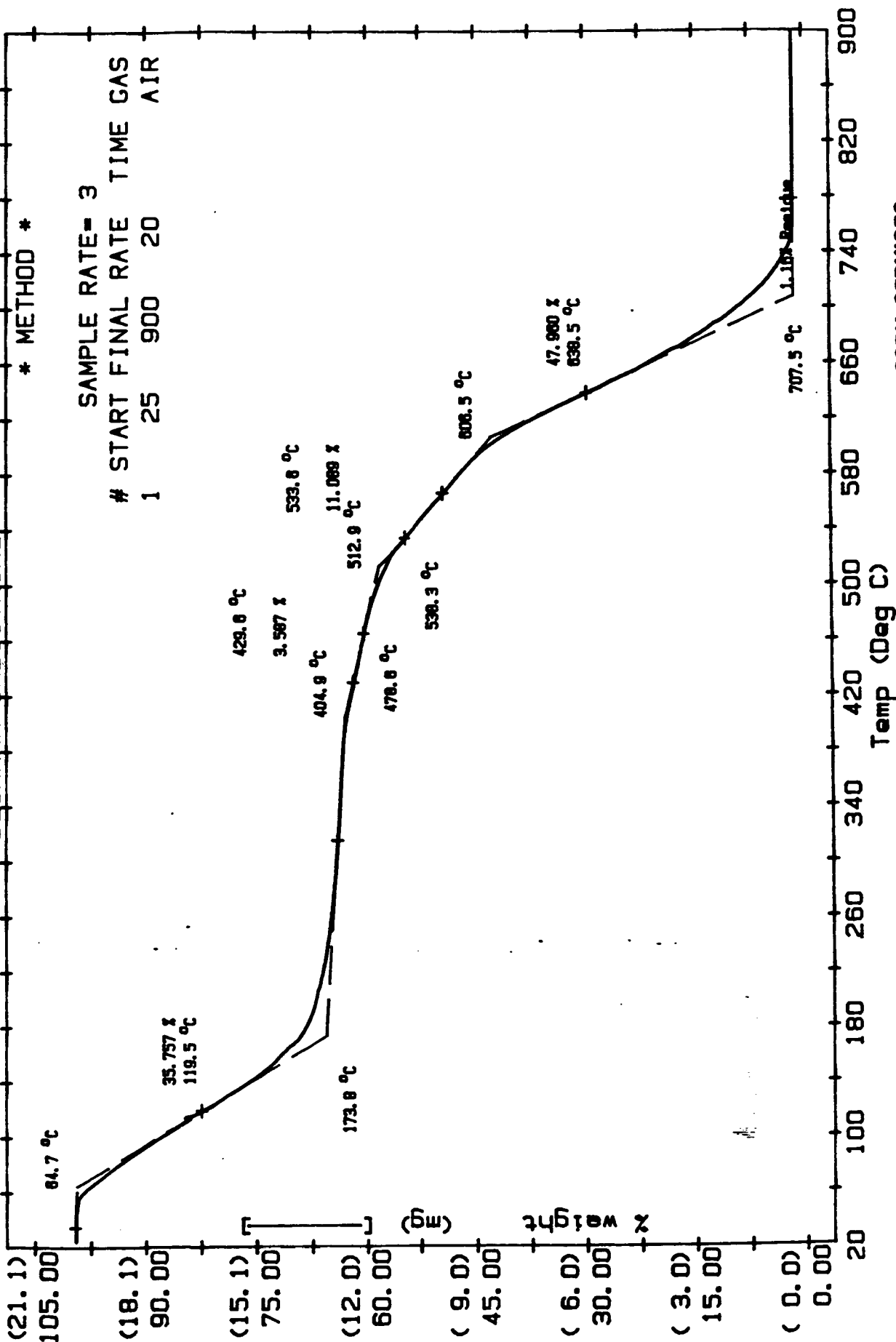
ANALYTICAL LABORATORY SERVICES

**Beckman Industrial**

Sample: 71108 1-2  
 Size: 20.138 mg  
 Run No: MIR #13063 (12)  
 Date: MAY/14/86 07:08  
 Operator: M. WEGENER  
 Disk ID: DATA DISK #106  
 File No: D 37.DAT V2.1  
 Plotted: MAY/14/86 13:56

## TGA

OMNITHERM DATA SYSTEM  
 BECKMAN INDUSTRIAL



ANALYTICAL LABORATORY SERVICES

**Beckman Industrial™**

Sample: 71108 I-3

Size: 16.619 mg

Run No: MIR #13063 (12)

Date: MAY/14/86 08:27

TGA

OMNITHERM DATA SYSTEM

BECKMAN INDUSTRIAL

Operator: M. WEGENER

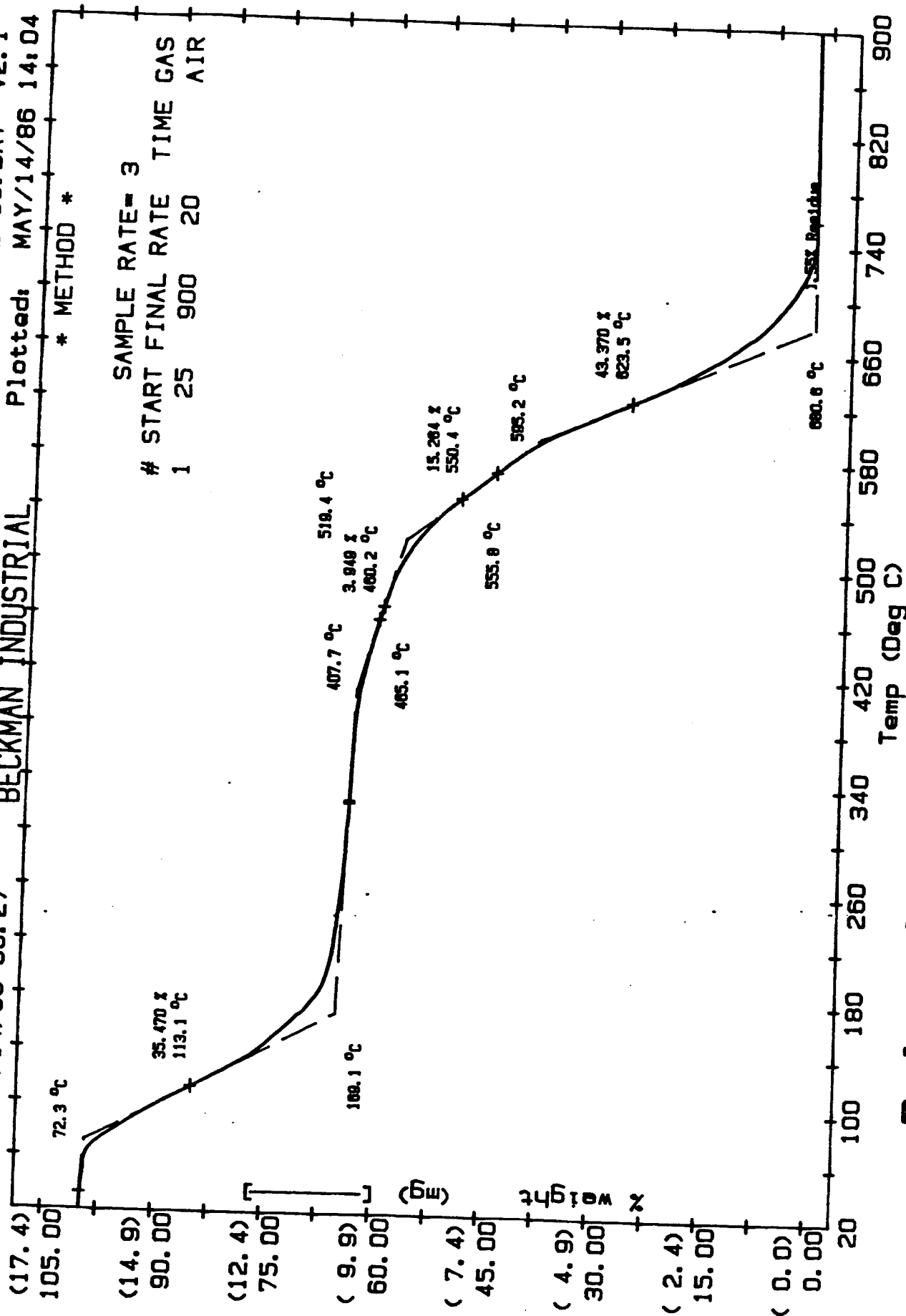
Disk ID: DATA DISK #106

File No: D 38.DAT V2.1

Plotted: MAY/14/86 14:04

\* METHOD \*

SAMPLE RATE= 3

# START FINAL RATE TIME GAS  
1 25 900 20 AIR**Beckman Industrial**

ANALYTICAL LABORATORY SERVICES



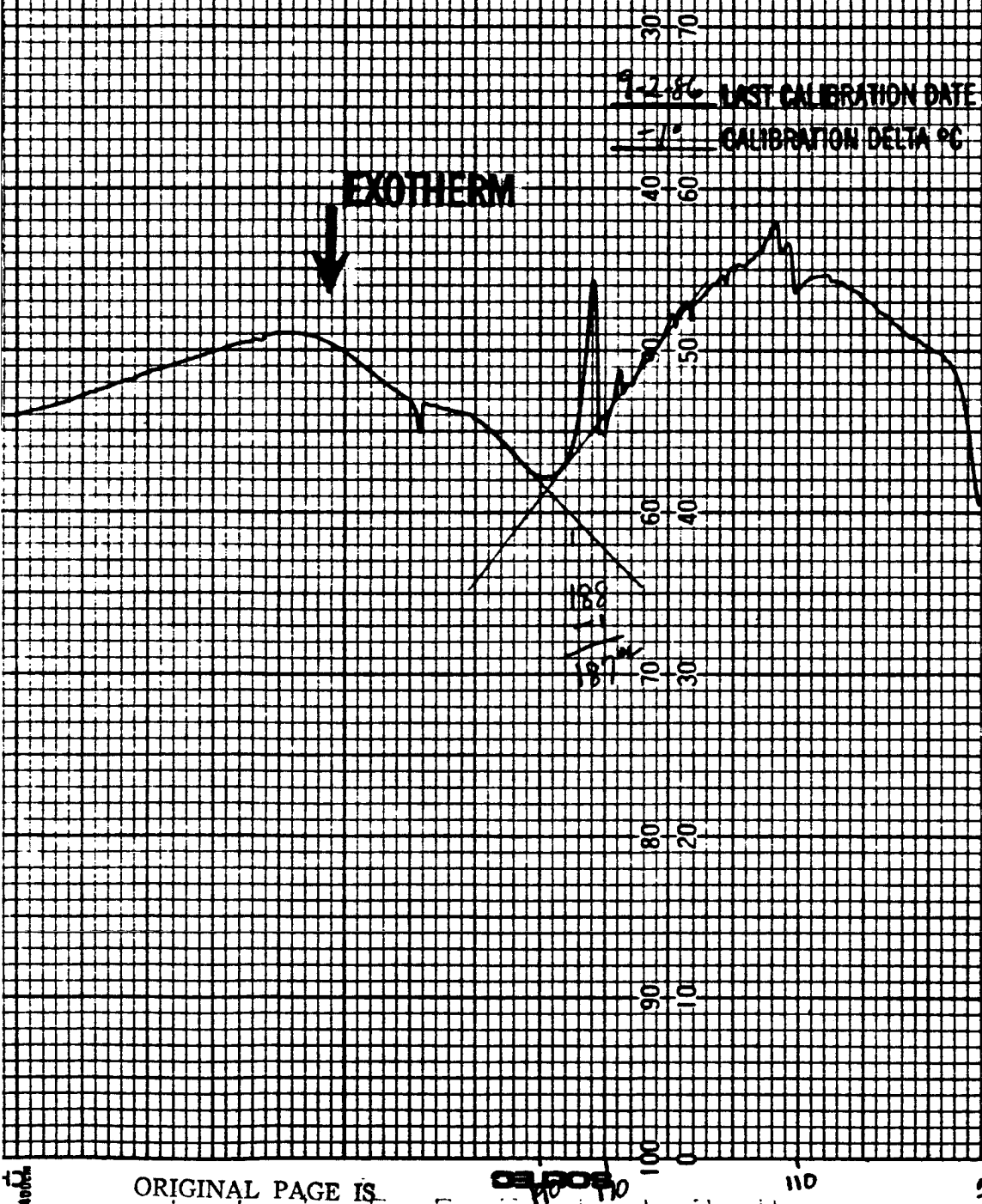
## U.S. POLYMEHC DSC-2

Sample 915D - 1-1 Wt. 5.2 mg  
 Heat Rate: 20 °C/min. Range 2.2 mcal/sec.  
 Recorder Span: 50 mV Chart speed: 12 mm/min  
 Temp. Limit Lower 50 ° Upper 350 °  
 Mode: Hold/Autocool/Cycle Cooling Rate: 10 °C/min  
 Operator: A. Kofele Date: 8-5-86

9-2-86 LAST CALIBRATION DATE

$\pm 1^\circ$  CALIBRATION DELTA °C

EXOTHERM



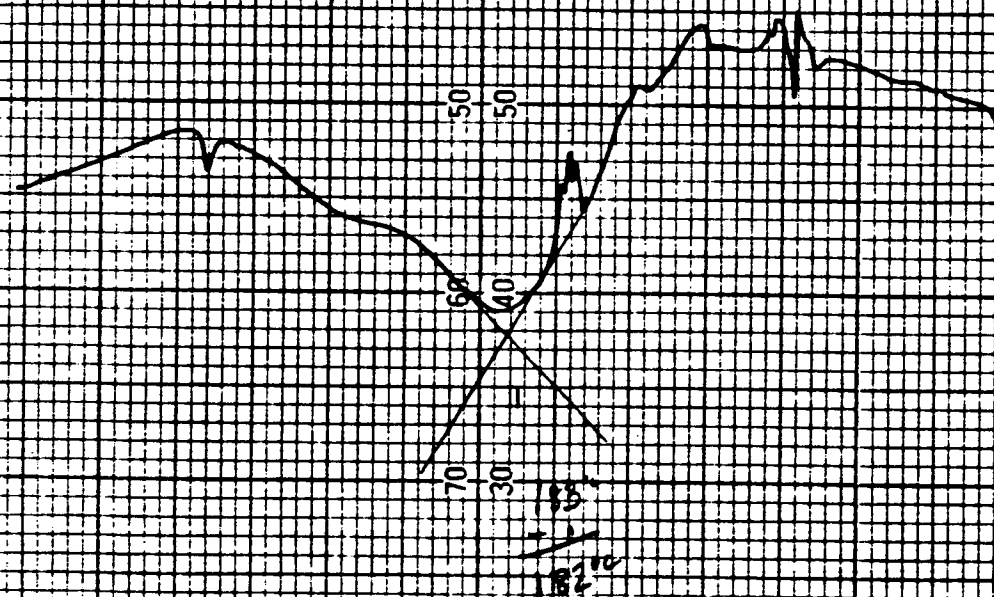
## U.S. POLYMERIC DSC-2

Sample 914D ..... Wt. 5.12 mg  
 Heat Rate: 20 °C/min. Range 2.5 mV/°C  
 Recorder Span: 50 mV Chart speed 15 mm/min  
 Temp Limits: Lower 50 Upper 350  
 Min. Hold/Autocool/Cycle Cooling Rate 40 °C/min  
 Operator A. Kofele Date 9-5-84

9-2-84 LAST CALIBRATION DATE

-1 CALIBRATION DELTA °C

EXOTHERM



30005

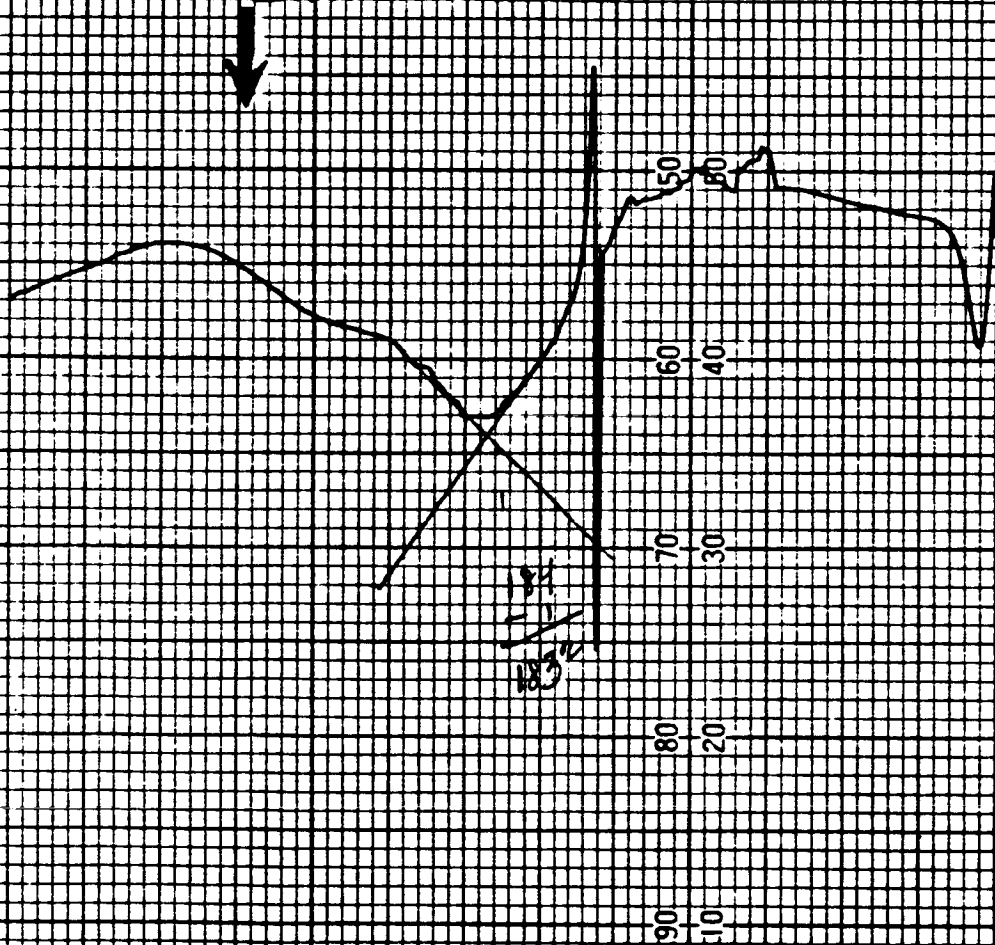
U.S. POLYMERICS INC.

Sample 9140 1-3 No. 52  
 Heat Rate 20 °C/min. Range 2.0 mcal/sec.  
 Recorder Span 50 mV Chart speed 10 mm/min  
 Temp Limits 50 Upper 350  
 Mode Hold/Aspen/Cycle Cooling Rate 20 °C/min.  
 Operator A. Kately Date 9-5-84

9-2-84 LAST CALIBRATION DATE

-1° CALIBRATION DELTA °C

EXOTHERM



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A FILE A:PHEN042.HDR TAKEN 09-06-1986 09:18:14

## \*\*\*\*\* AREA PERCENT REPORT \*\*\*\*\*

```

*****
Sample Name: 91LD,1-1,C=6.89                      Operator Initials: JGZ      *
Date: 09-06-1986 09:18:14 Method:PHENOLIC          DATA FILE: A:PHEN042.PTS    *
Interface: 4                      Cycle#: 42          Channel#: 0      Vial#: N.A.    *
Starting Peak Width: 10      Threshold: .01          *
*****
Instrument Type: BECKMAN HPLC                      Column Type: MICROBONDAPAK C-18  *
Solvent Description: THF/WATER, 2:1 BY WEIGHT        *
Operating Conditions: R.T., FLOWRATE=1.5 ML/MIN      *
Detector 0: 220NM/.5AU                          Detector 1:          *
Misc. Information: LENGTH=25                        *
*****
Starting Delay: 0.00                                Ending Retention Time: 10.00

```

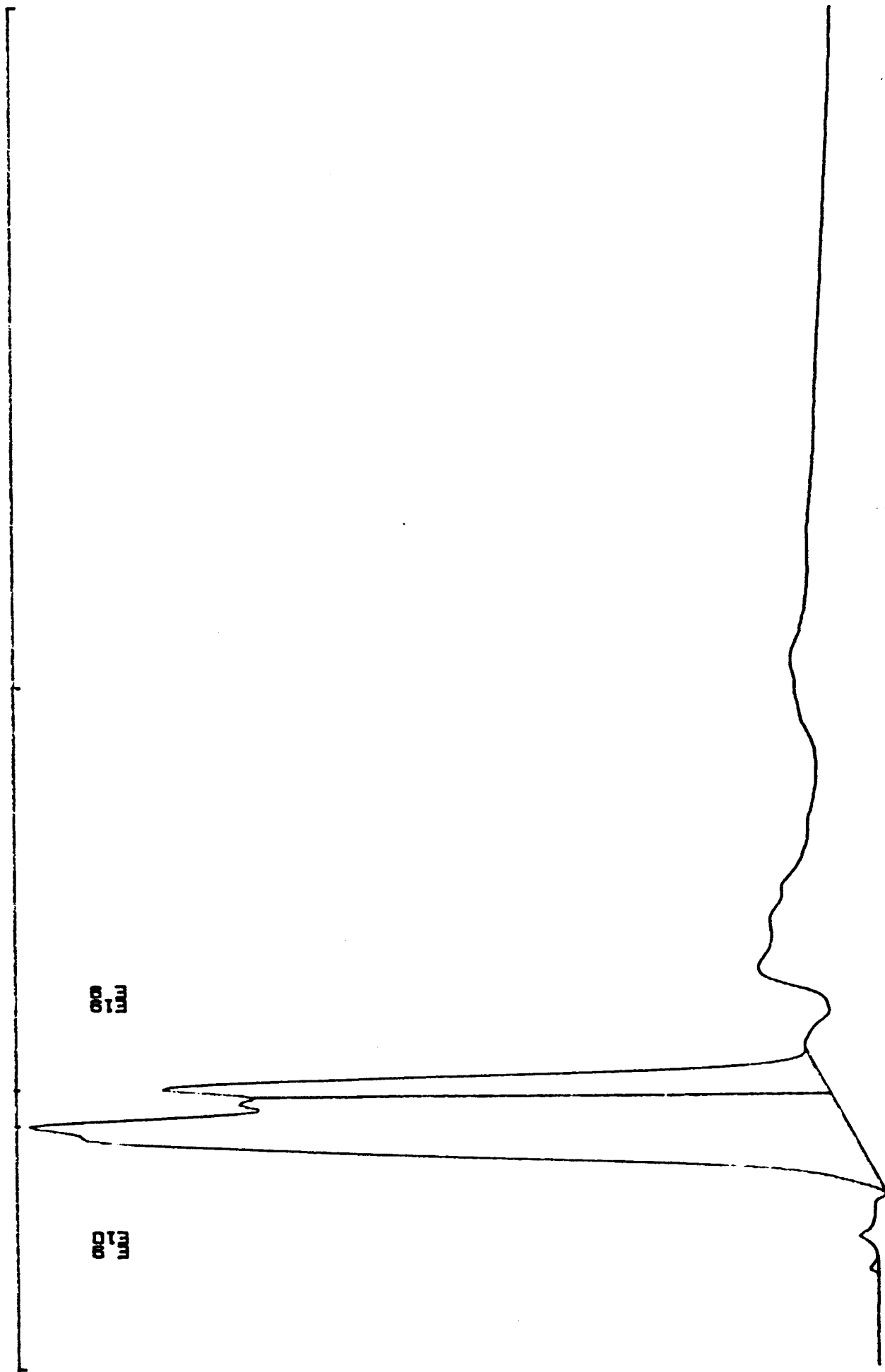
Ret Time	Peak Area	Area %	B L	Peak Ht.	Normalized %	Area/ Height
1.82	141349	75.8850	2	5927	100.000	23.8
2.08	44918	24.1150	2	4812	31.778	9.3

Total Area: 186267    Area Reject: 1000    One sample per 1.000 sec.

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DATA FILE=PHEND42 FROM 0.00 MIN. TO 10.00 MIN. LOW SCALE= 5.406 Mv. HIGH SCALE= 11.628 Mv.  
91 LD, J-1, C-6.88 MG/ML, 9/5/86, JGZ

1.82  
2.08



1.82

2.08

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## \*\*\*\*\* AREA PERCENT REPORT \*\*\*\*\*

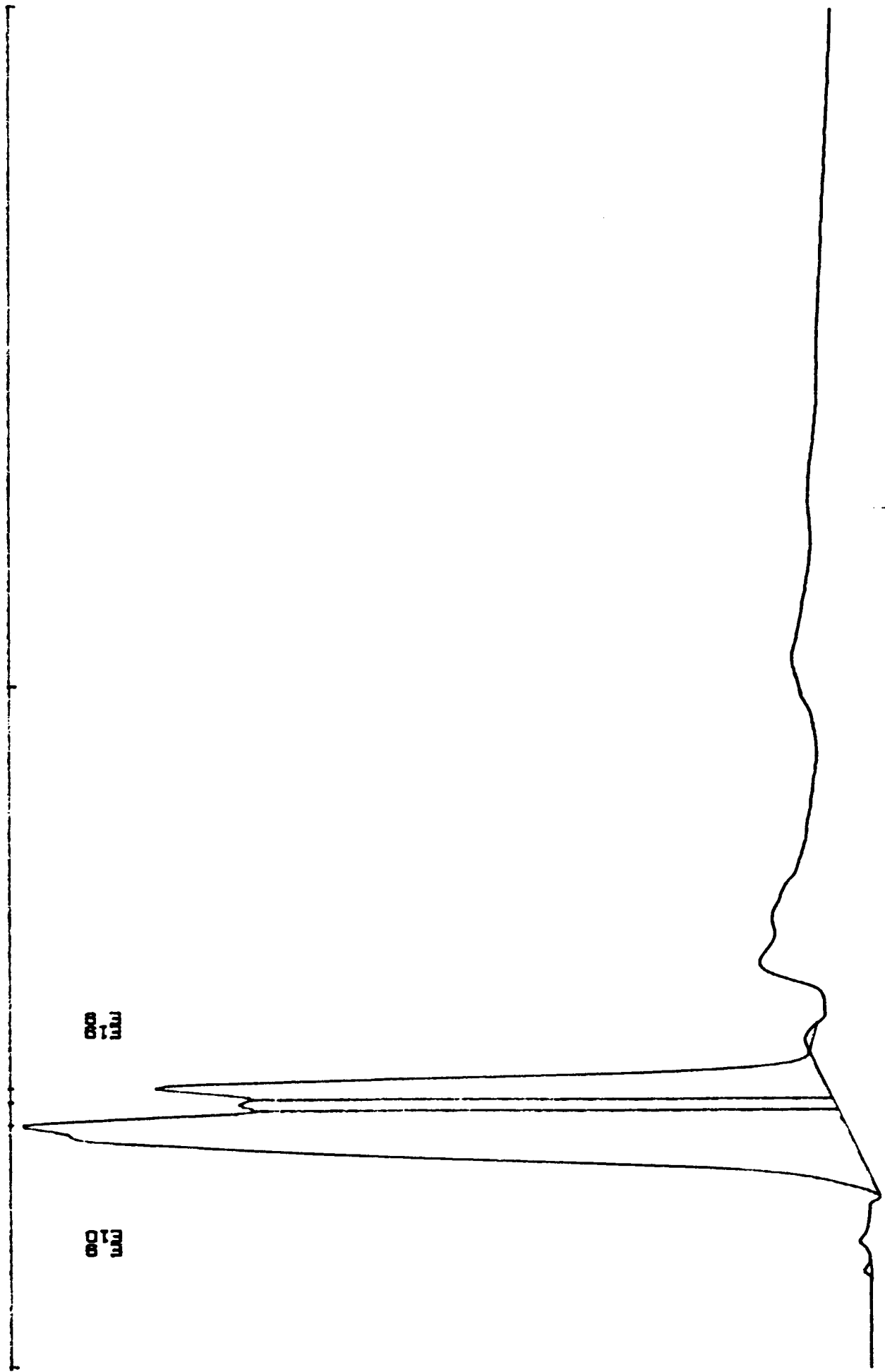
\*\*\*\*\*  
Sample Name: 91LD,1-2,C=6.80 Operator Initials: JGZ \*  
Date: 09-06-1986 08:54:02 Method: PHENOLIC DATA FILE: A:PHEN041.PTS \*  
Interface: 0 Cycle#: 41 Channel#: 0 Vial#: N.A. \*  
Starting Peak Width: 10 Threshold: 1 \*  
\*\*\*\*\*  
Instrument Type: BECKMAN HPLC Column Type: MICROBONDAPAK C-18 \*  
Solvent Description: THF/WATER, 2:1 BY WEIGHT \*  
Operating Conditions: R.T., FLOWRATE=1.5 ML/MIN \*  
Detector 0: 220NM/.5AU Detector 1: \*  
Misc. Information: LENGTH=25 \*  
\*\*\*\*\*  
Starting Delay: 0.00 Ending Retention Time: 10.00

Ret Time	Peak Area	Area %	B L	Peak Ht.	Normalized %	Area/ Height
2 1.82	121318	64.1205	2	5979	100.000	20.3
3 1.98	21021	11.1102	2	4292	17.327	4.9
4 2.08	46864	24.7693	2	4890	38.629	9.6

Total Area: 189203 Area Reject: 1000 One sample per 1.000 sec.

DATA FILE=PHEND41 FROM 0.00 MIN. TO 10.00 MIN. LOW SCALE= 5.388 MV. HIGH SCALE= 11.634 MV.  
91 LD, 1-2, C=6.80 MG/ML, 9/6/86, JGZ

0000  
0000  
1.2



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\*\*\*\*\* AREA PERCENT REPORT \*\*\*\*\*

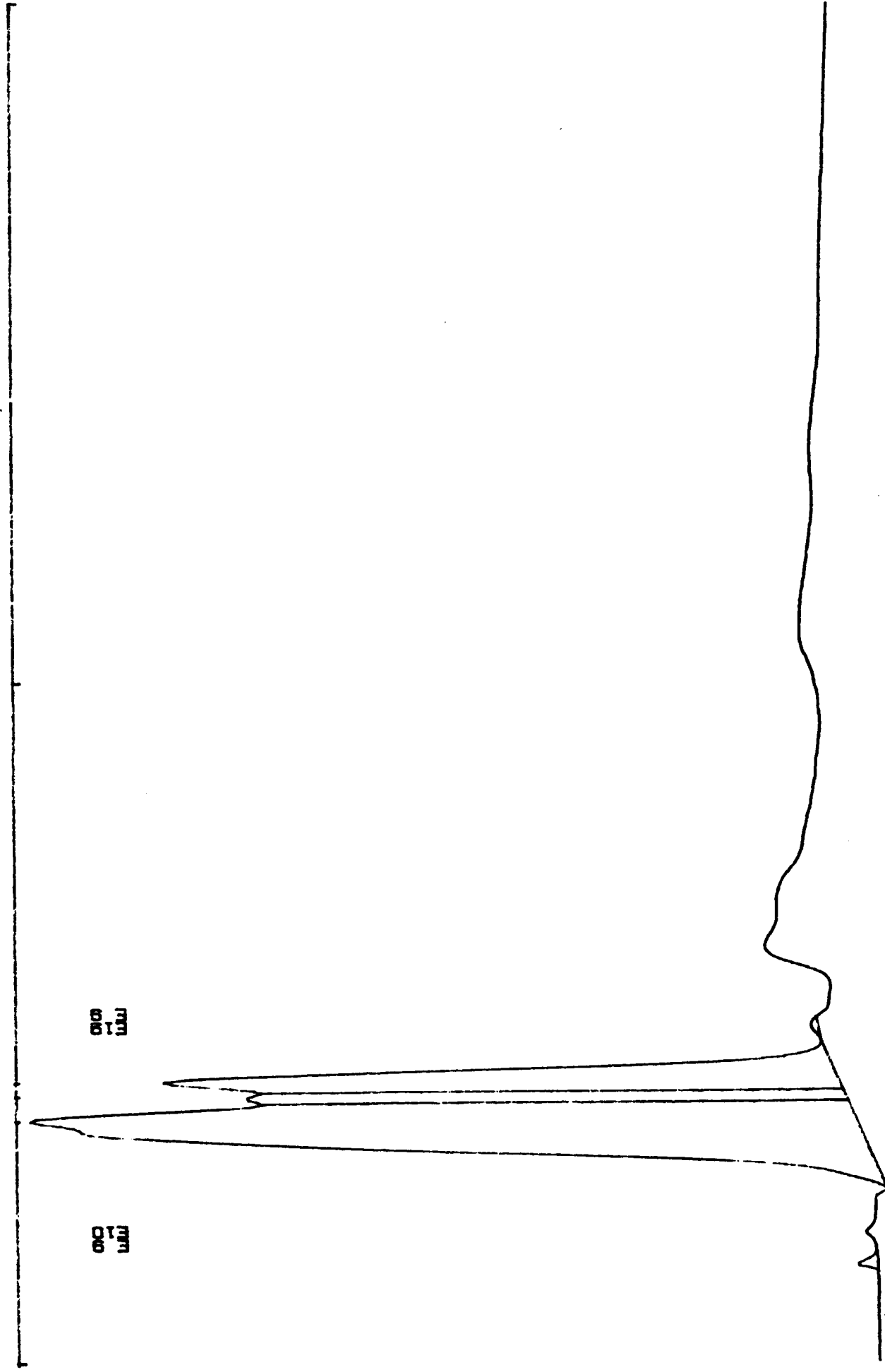
\*\*\*\*\*  
 Sample Name: 91LD,1-3,C=6.97 Operator Initials: JGZ \*  
 Date: 09-06-1986 08:23:04 Method: PHENOLIC DATA FILE: A:PHENO40.PTS \*  
 Interface: 0 Cycle#: 40 Channel#: 0 Vial#: N.A. \*  
 Starting Peak Width: 10 Threshold: 1 \*  
 \*\*\*\*\*  
 Instrument Type: BECKMAN HPLC Column Type: MICROBONDAPAK C-18 \*  
 Solvent Description: THF/WATER, 2:1 BY WEIGHT \*  
 Operating Conditions: R.T., FLOWRATE=1.5 ML/MIN \*  
 Detector 0: 220NM/.5AU Detector 1: \*  
 Misc. Information: LENGTH=25 \*  
 \*\*\*\*\*  
 Starting Delay: 0.00 Ending Retention Time: 10.00

Ret Time	Peak Area	Area %	B L	Peak Ht.	Normalized %	Area/ Height
1.82	125139	64.2723	2	6105	100.000	20.5
2.00	21318	10.9492	2	4365	17.036	4.9
2.10	48244	24.7785	2	4988	38.552	9.7
Total Area: 194701 Area Reject: 1000 One sample per 1.000 sec.						



DATA FILE=PHEND40 FROM 0.00 MIN. TO 10.00 MIN. LOW SCALE= 5.397 MV. HIGH SCALE= 11.741 MV.  
81 LD, 1-3, C=6.97 MG/ML, 9/8/86, JGZ

NOO  
NOO  
NOO



# GPC CALIBRATION PLOT

## \*\*\* Calibration Data \*\*\*

Calibration Name:

Misc Information:

Fit Type: 3

Log Mol Wt =  $A + Bx + Cx^2 + Dx^3$

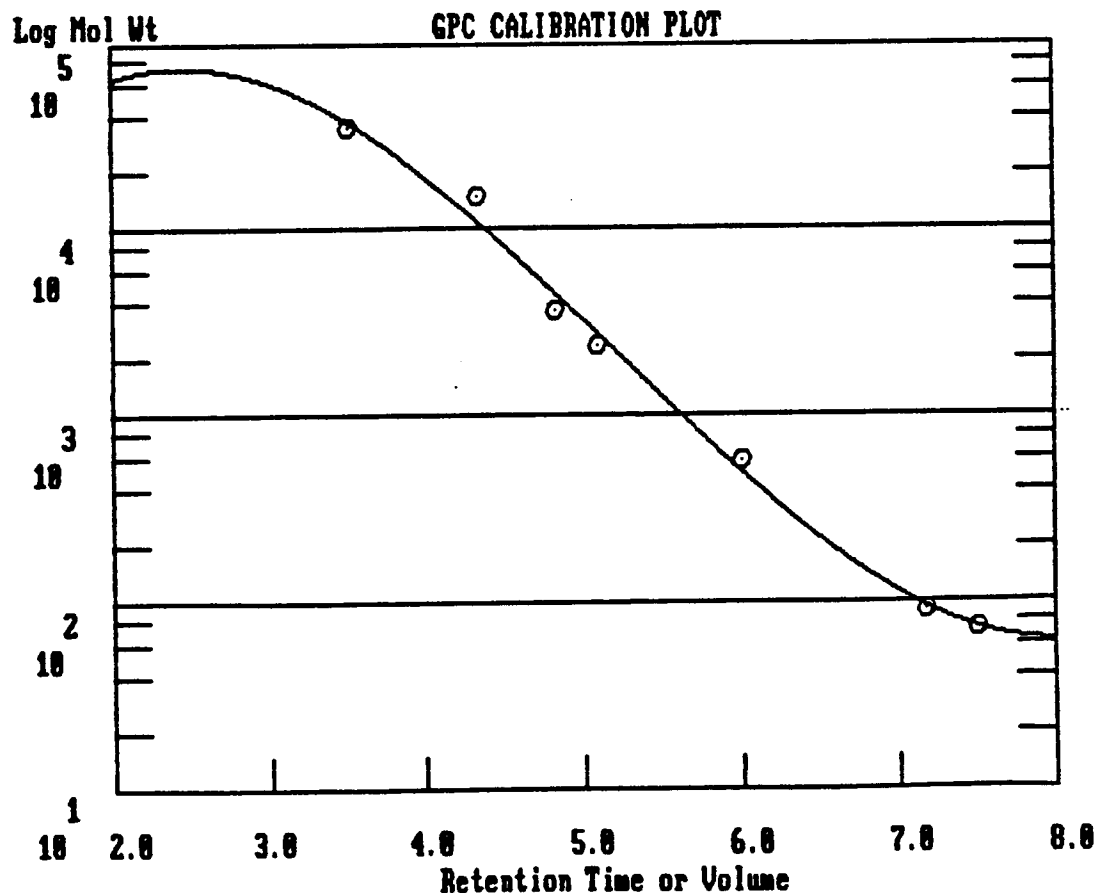
A= 2.538977 B= 2.115815 C= -.5646824

D= 3.606432E-02

Coefficient of Determination: 0.9902

Ret Time Molecular Weight Log Mol Wt

3.50	35000	4.544
4.33	15000	4.176
4.83	3600	3.556
5.09	2350	3.371
6.00	570	2.756
7.17	92	1.964
7.50	72	1.857



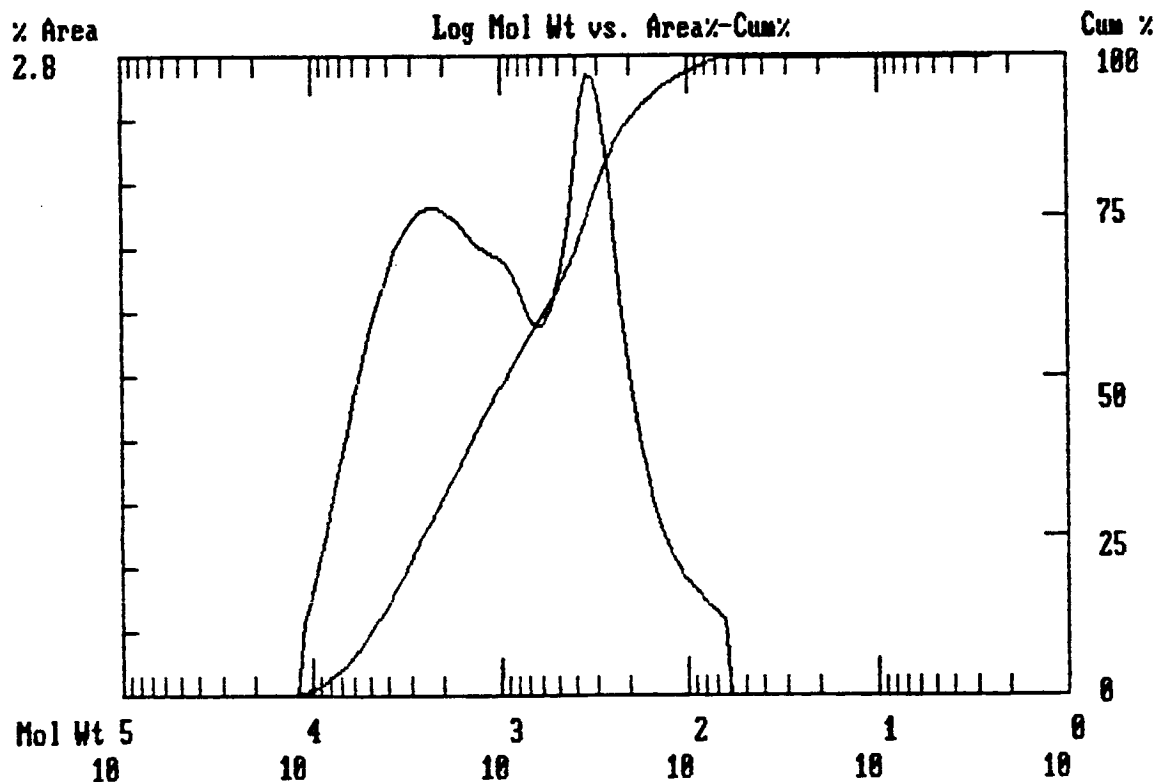
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## \*\*\*\*\* GPC REPORT \*\*\*\*\*

```

*****
Sample Name: 91LD 1-1 C=2.68      Operator Initials: GBF      *
Date: 08-05-1986 13:16:30 Method:  DATA FILE: B:GPC25   .PTS    *
Interface: 5      Cycle#: 25      Channel#: 0      Vial#: N.A.    *
Starting Peak Width: 60      Threshold: 0      *
*****
Instrument Type: HPLC/BECKMAN      Column Type: ULTRASTYRAGEL 500A  *
Solvent Description: THF      *
Operating Conditions: T=35C FLOWRATE=2.0ML/MIN      *
Detector 0: 254NM/.1AU      Detector 1:      *
Misc. Information: CALIBRATION/GPC      *
*****
Starting Delay: 0.00      Ending Retention Time: 10.00
Calibration file: GPCPHEN
Molecular Weight Distribution Averages
Baseline TIMES: 3.85 to 10.00 MW: 22295 to 2
Process TIMES: 3.85 to 10.00 MW: 22295 to 2
Total Area: 153894
          1770
          462
Mn= 3.8293
          4175
          1555

```

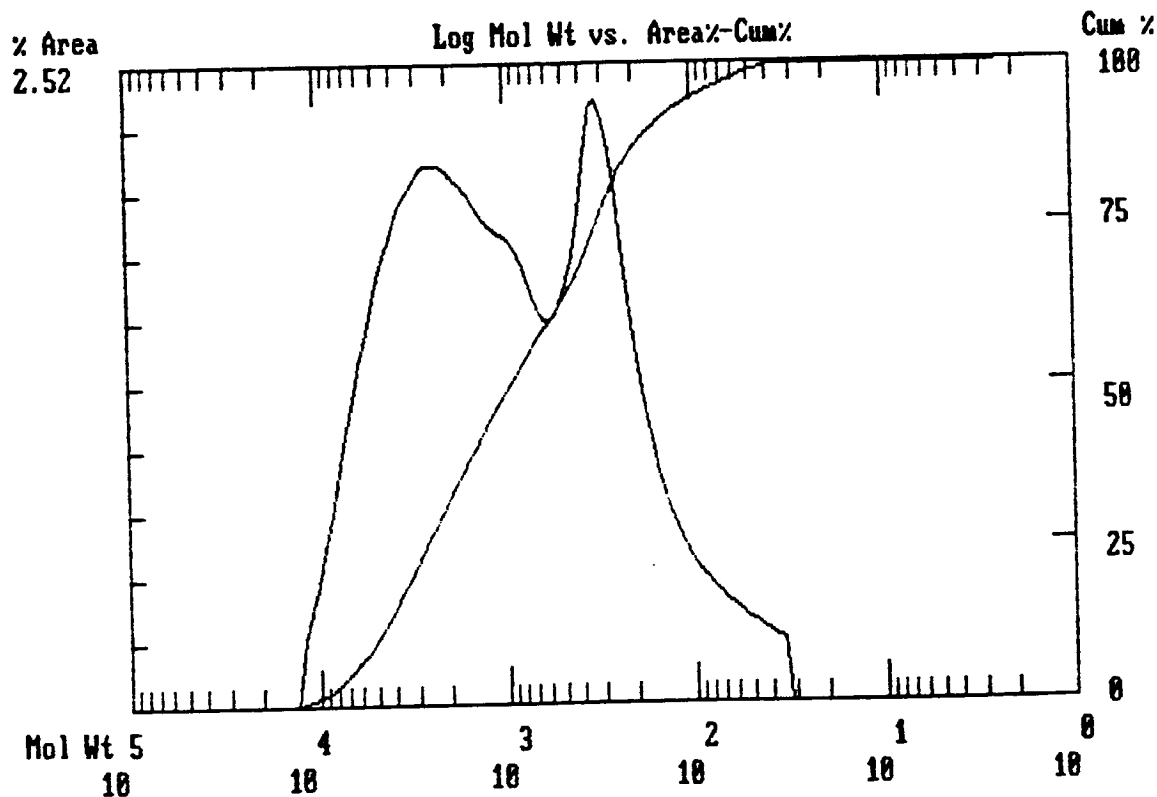


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\*\*\*\*\* GPC REPORT \*\*\*\*\*

```

*****
Sample Name: 91LD 1-2 C=2.68                      Operator Initials: GBF *
Date: 08-05-1986 13:32:38 Method:                  DATA FILE: B:GPC26 .FTS *
Interface: 5                      Cycle#: 26          Channel#: 0   Vial#: N.A. *
Starting Peak Width: 60   Threshold: 0              *
*****
Instrument Type: HPLC/BECKMAN                      Column Type: ULTRASTYRAGEL 500A *
Solvent Description: THF                            *
Operating Conditions: T=35C FLOWRATE=2.0ML/MIN      *
Detector 0: 254NM/.1AU                            Detector 1: *
Misc. Information: CALIBRATION/GPC                  *
*****
Starting Delay: 0.00                               Ending Retention Time: 10.00
Calibration file: GPCPHEN
Molecular Weight Distribution Averages
Baseline TIMES: 3.85 to 10.00 MW: 22295 to 2
Baseline TIMES: 3.85 to 10.00 MW: 22295 to 2
Total Area: 203454
Mn= 1816
    363
    4.9988
    4423
    1582
  
```



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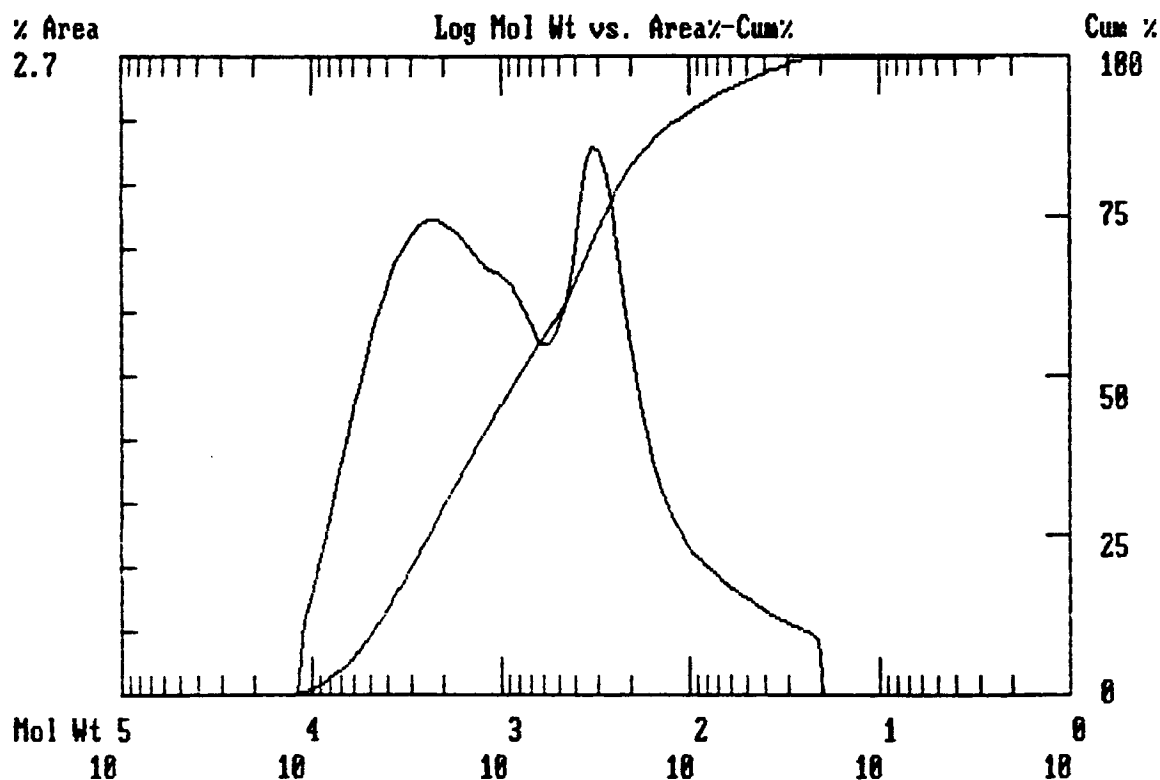
TA FILE B:GPC27 .HDR TAKEN 08-05-1986 17:08:04

## \*\*\*\*\* GPC REPORT \*\*\*\*\*

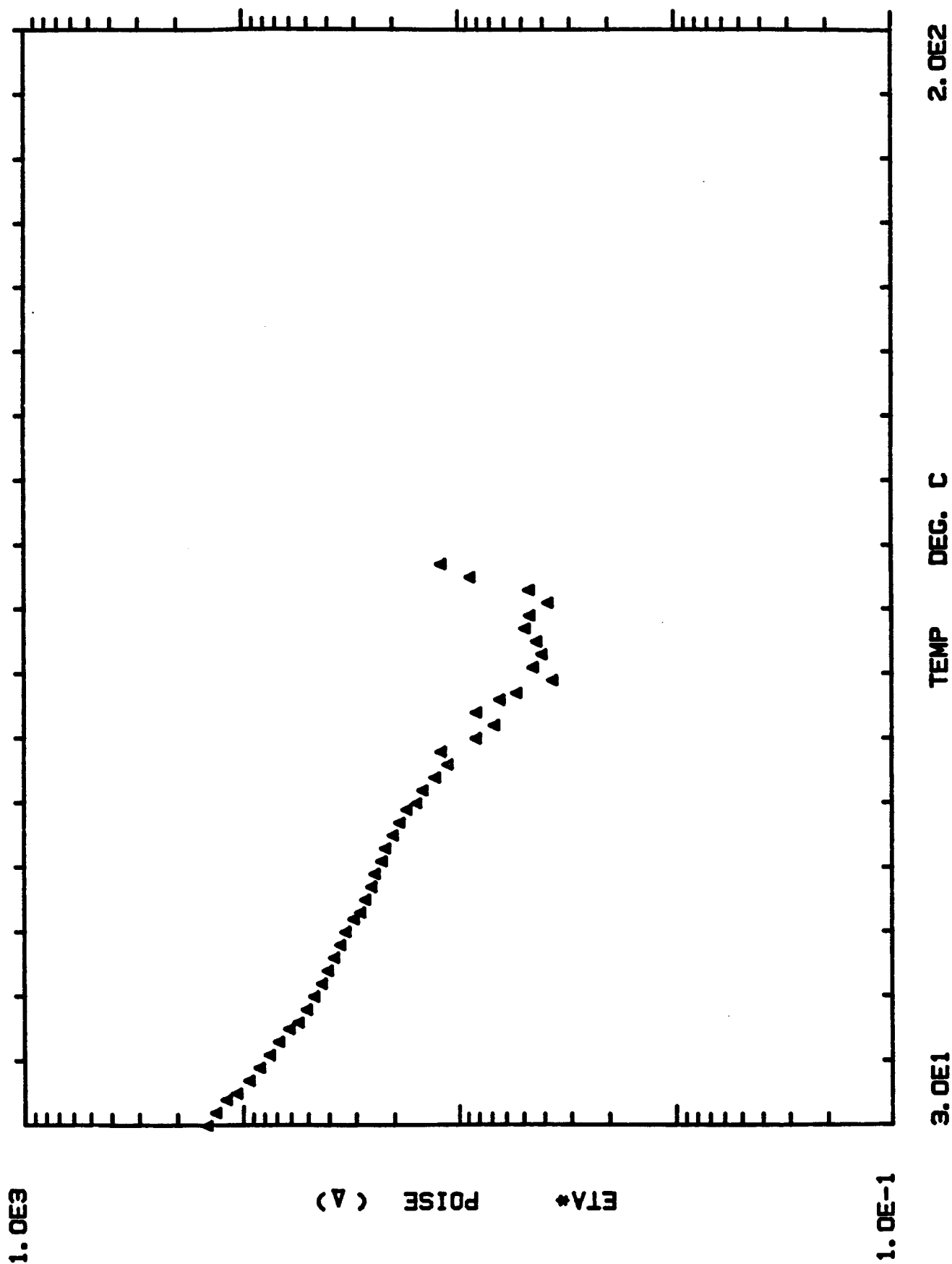
```

*****
Sample Name: 91LD 1-3 =2.68                      Operator Initials: GBF      *
Date: 08-05-1986 13:50:09 Method:                DATA FILE: B:GPC27 .PTS    *
Interface: 5                      Cycle#: 27        Channel#: 0      Vial#: N.A.  *
Starting Peak Width: 60      Threshold: 0          *
*****
Instrument Type: HPLC/BECKMAN                      Column Type: ULTRASTYRAGEL 500A *
Solvent Description: THF                            *
Operating Conditions: T=35C FLOWRATE=2.0ML/MIN      *
Detector 0: 254NM/.1AU                          Detector 1:          *
Misc. Information: CALIBRATION/GPC                 *
*****
Starting Delay: 0.00                               Ending Retention Time: 10.00
Calibration file: GPCPHEN
Molecular Weight Distribution Averages
Baseline TIMES: 3.85 to 10.00 MW: 22295 to 2
Process TIMES: 3.85 to 10.00 MW: 22295 to 2
Total Area: 215493
= 1658
= 265
/Mn= 6.2422
= 4186
= 1432

```



NASA FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT 1-1



Rheometrics RECAP II

Experiment No.: 9 Sample No.: 1

File:

A FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LDT 1-1

Motor: CP

Date and Time: Tuesday, August 19, 1986 - 09:14:18

Operating Mode: DYNAMIC

Test Type: CURE

Geometry: DISK & PLATE

RADIUS: 25.00

GAP: 0.50

Strain:

Strain = 50%

Frequency = 10 RAD/SEC

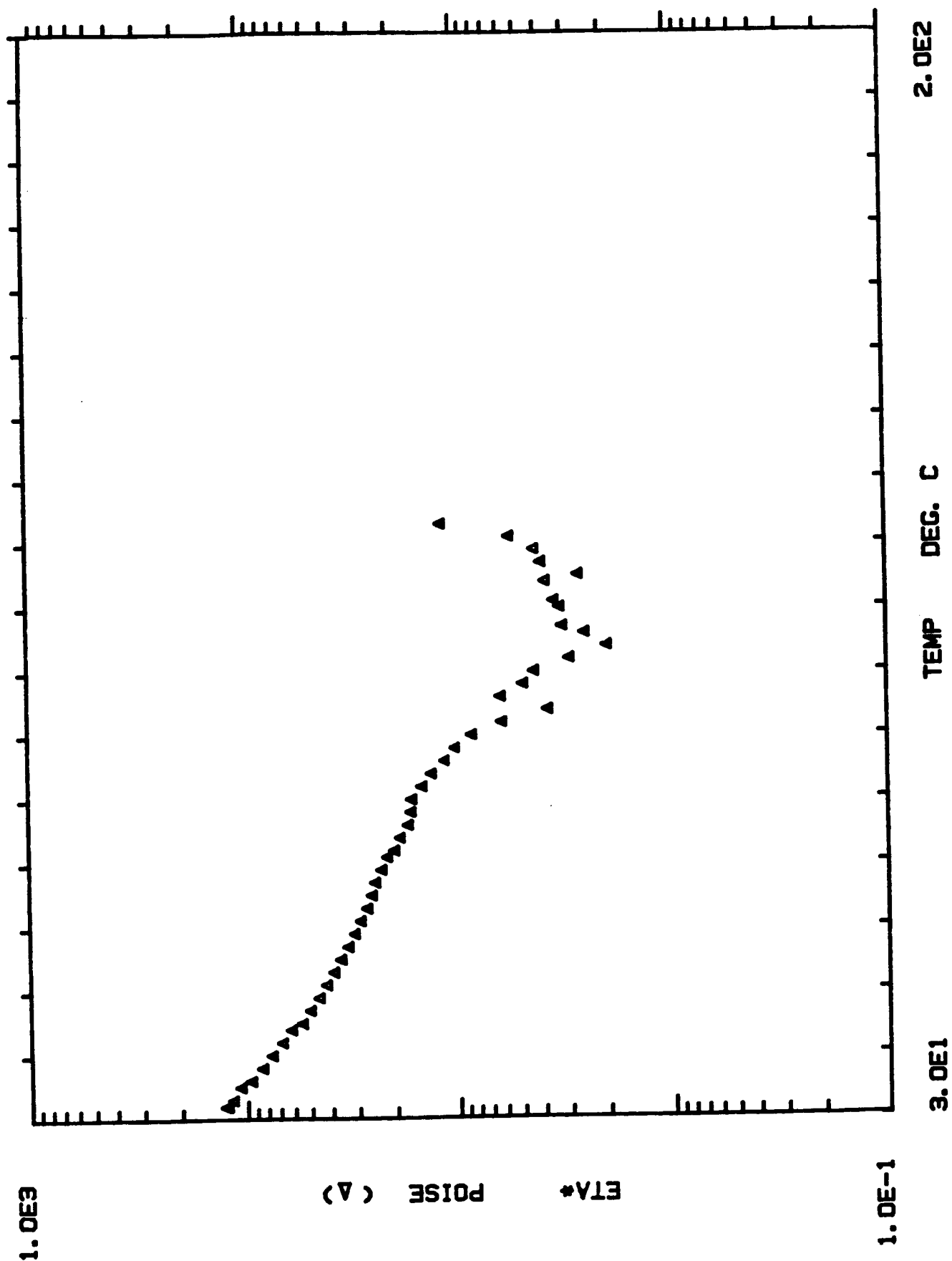
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	ETA*	ETA'	ETA''	TORQUE	TIME	TEMP
	POISE	POISE	POISE	GRAMS-CM	MIN.	DEG. C
1	1.578e+002	1.497e+002	4.990e+001	1.980e+001	2.000e-001	2.900e+001
2	1.423e+002	1.357e+002	4.303e+001	1.785e+001	1.000e+000	3.000e+001
3	1.296e+002	1.225e+002	4.224e+001	1.626e+001	2.000e+000	3.200e+001
4	1.160e+002	1.083e+002	4.153e+001	1.455e+001	3.000e+000	3.400e+001
5	1.037e+002	9.560e+001	4.030e+001	1.302e+001	4.000e+000	3.500e+001
6	9.127e+001	8.267e+001	3.869e+001	1.145e+001	5.000e+000	3.700e+001
7	8.163e+001	7.248e+001	3.755e+001	1.024e+001	6.000e+000	3.900e+001
8	7.320e+001	6.363e+001	3.620e+001	9.177e+000	7.000e+000	4.100e+001
9	6.627e+001	5.621e+001	3.509e+001	8.309e+000	8.000e+000	4.300e+001
0	5.932e+001	4.882e+001	3.369e+001	7.444e+000	9.000e+000	4.500e+001
1	5.373e+001	4.312e+001	3.205e+001	6.738e+000	1.000e+001	4.600e+001
2	4.920e+001	3.807e+001	3.116e+001	6.171e+000	1.100e+001	4.800e+001
3	4.546e+001	3.439e+001	2.973e+001	5.701e+000	1.200e+001	5.000e+001
4	4.186e+001	3.076e+001	2.839e+001	5.253e+000	1.300e+001	5.200e+001
5	3.926e+001	2.786e+001	2.767e+001	4.922e+000	1.400e+001	5.400e+001
6	3.668e+001	2.578e+001	2.609e+001	4.599e+000	1.500e+001	5.600e+001
7	3.434e+001	2.353e+001	2.502e+001	4.309e+000	1.600e+001	5.800e+001
8	3.247e+001	2.236e+001	2.354e+001	4.071e+000	1.700e+001	6.000e+001
9	2.981e+001	2.101e+001	2.114e+001	3.740e+000	1.800e+001	6.200e+001
0	2.779e+001	2.001e+001	1.928e+001	3.484e+000	1.900e+001	6.300e+001
1	2.632e+001	1.961e+001	1.755e+001	3.300e+000	2.000e+001	6.500e+001
2	2.465e+001	1.893e+001	1.590e+001	3.090e+000	2.100e+001	6.700e+001
3	2.383e+001	1.868e+001	1.479e+001	2.988e+000	2.200e+001	6.900e+001
4	2.213e+001	1.824e+001	1.254e+001	2.778e+000	2.300e+001	7.100e+001
5	2.132e+001	1.816e+001	1.117e+001	2.674e+000	2.400e+001	7.300e+001
6	1.963e+001	1.743e+001	9.026e+000	2.464e+000	2.500e+001	7.500e+001
7	1.834e+001	1.672e+001	7.535e+000	2.301e+000	2.600e+001	7.700e+001
8	1.701e+001	1.575e+001	6.425e+000	2.136e+000	2.700e+001	7.900e+001
9	1.528e+001	1.436e+001	5.215e+000	1.916e+000	2.800e+001	8.000e+001
0	1.433e+001	1.371e+001	4.175e+000	1.798e+000	2.900e+001	8.200e+001
1	1.259e+001	1.206e+001	3.616e+000	1.580e+000	3.000e+001	8.400e+001
2	1.102e+001	1.062e+001	2.946e+000	1.382e+000	3.100e+001	8.600e+001
3	1.187e+001	1.134e+001	3.507e+000	1.489e+000	3.200e+001	8.800e+001
4	8.015e+000	7.691e+000	2.259e+000	1.005e+000	3.300e+001	9.000e+001
5	6.613e+000	6.313e+000	1.968e+000	8.300e-001	3.400e+001	9.200e+001
6	6.006e+000	7.834e+000	1.653e+000	1.004e+000	3.500e+001	9.400e+001
7	6.245e+000	6.105e+000	1.313e+000	7.832e-001	3.600e+001	9.600e+001
8	5.230e+000	5.122e+000	1.055e+000	6.557e-001	3.700e+001	9.700e+001
9	3.560e+000	3.319e+000	1.285e+000	4.463e-001	3.800e+001	9.900e+001
0	4.391e+000	4.251e+000	1.098e+000	5.502e-001	3.900e+001	1.010e+002
1	3.994e+000	3.831e+000	1.129e+000	5.009e-001	4.000e+001	1.030e+002
2	4.228e+000	4.062e+000	1.174e+000	5.301e-001	4.100e+001	1.050e+002
3	4.784e+000	4.628e+000	1.212e+000	5.996e-001	4.200e+001	1.070e+002
4	4.547e+000	4.370e+000	1.256e+000	5.703e-001	4.300e+001	1.090e+002
5	3.738e+000	3.484e+000	1.356e+000	4.684e-001	4.400e+001	1.110e+002
6	4.588e+000	4.268e+000	1.681e+000	5.758e-001	4.500e+001	1.130e+002
7	8.586e+000	8.141e+000	2.728e+000	1.077e+000	4.600e+001	1.150e+002
8	1.188e+001	1.141e+001	3.317e+000	1.491e+000	4.700e+001	1.170e+002

ORIGINAL PAGE IS  
OF POOR QUALITY



## NASA FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT1-2



Rheometrics RECAP II

Experiment No.: 10 Sample No.: 1

File:

MA FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT1-2

Operator :CP

Date and Time : Tuesday, August 19, 1986 - 10:23:12

Operating Mode : DYNAMIC

Prep Type : CURE

Geometry : DISK & PLATE

RADIUS : 25.00

GAP : 0.50

Notes :

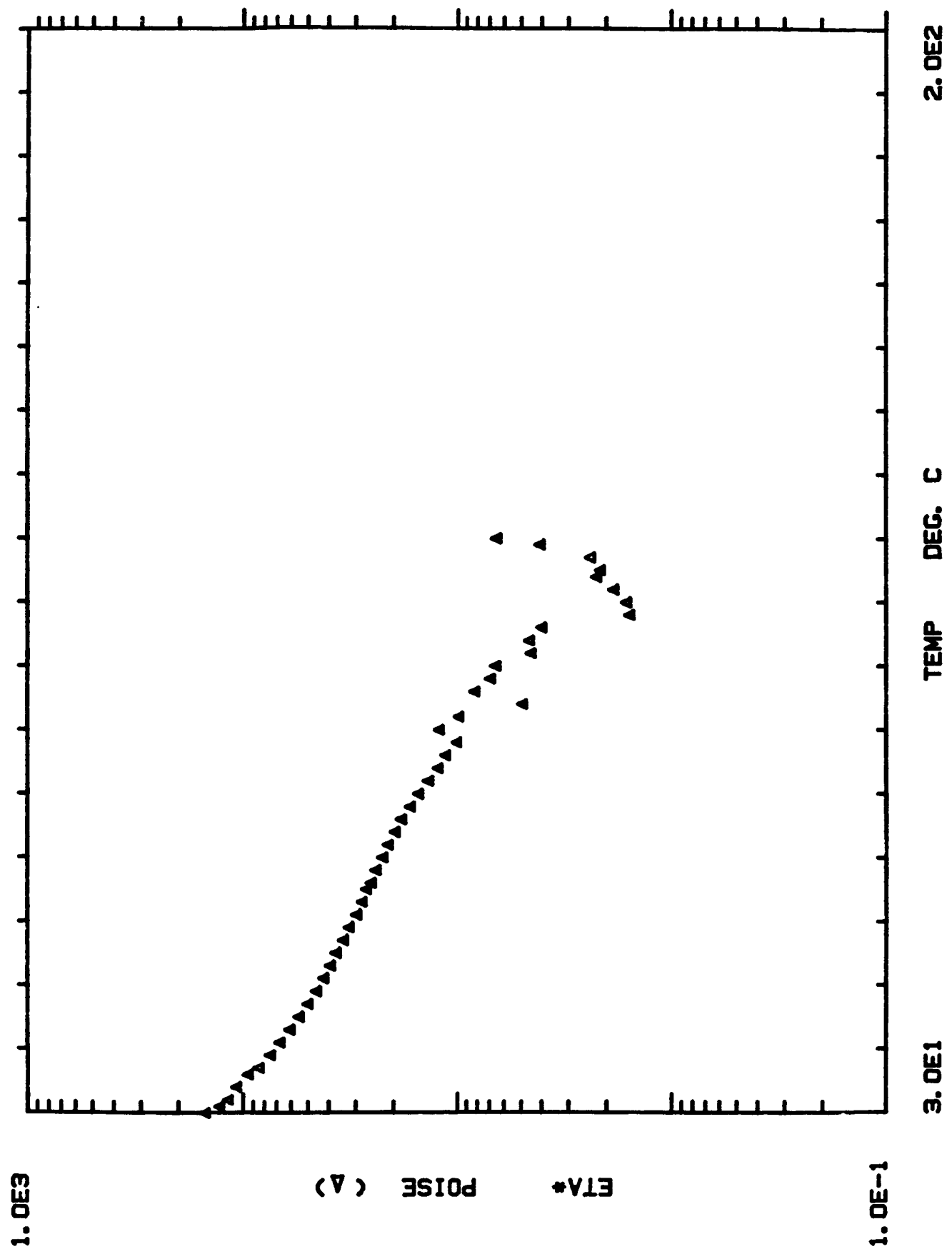
Strain =50%

Frequency =10 RAD/SEC

ORIGINAL PAGE IS  
OF POOR QUALITY

	ETA*	ETA'	ETA"	TORQUE	TIME	TEMP
	POISE	POISE	POISE	GRAMS-CM	MIN.	DEG. C
1	1.231e+002	1.134e+002	4.783e+001	1.545e+001	2.000e+001	3.200e+001
2	1.209e+002	1.122e+002	4.456e+001	1.516e+001	1.000e+000	3.200e+001
3	1.142e+002	1.060e+002	4.239e+001	1.434e+001	2.000e+000	3.300e+001
4	1.050e+002	9.646e+001	4.155e+001	1.318e+001	3.000e+000	3.500e+001
5	9.392e+001	8.514e+001	3.964e+001	1.179e+001	4.000e+000	3.600e+001
6	8.297e+001	7.401e+001	3.751e+001	1.042e+001	5.000e+000	3.800e+001
7	7.472e+001	6.529e+001	3.634e+001	9.374e+000	6.000e+000	4.000e+001
8	6.679e+001	5.701e+001	3.480e+001	8.384e+000	7.000e+000	4.200e+001
9	6.040e+001	4.997e+001	3.393e+001	7.578e+000	8.000e+000	4.400e+001
0	5.379e+001	4.312e+001	3.216e+001	6.753e+000	9.000e+000	4.500e+001
1	4.911e+001	3.817e+001	3.090e+001	6.170e+000	1.000e+001	4.700e+001
2	4.467e+001	3.357e+001	2.947e+001	5.606e+000	1.100e+001	4.900e+001
3	4.114e+001	2.980e+001	2.836e+001	5.167e+000	1.200e+001	5.100e+001
4	3.796e+001	2.680e+001	2.688e+001	4.763e+000	1.300e+001	5.300e+001
5	3.517e+001	2.423e+001	2.550e+001	4.415e+000	1.400e+001	5.500e+001
6	3.250e+001	2.215e+001	2.379e+001	4.079e+000	1.500e+001	5.700e+001
7	3.031e+001	2.091e+001	2.194e+001	3.805e+000	1.600e+001	5.900e+001
8	2.832e+001	1.989e+001	2.017e+001	3.554e+000	1.700e+001	6.100e+001
9	2.640e+001	1.900e+001	1.833e+001	3.314e+000	1.800e+001	6.300e+001
0	2.502e+001	1.862e+001	1.672e+001	3.144e+000	1.900e+001	6.500e+001
1	2.412e+001	1.869e+001	1.526e+001	3.028e+000	2.000e+001	6.700e+001
2	2.253e+001	1.822e+001	1.326e+001	2.830e+000	2.100e+001	6.900e+001
3	2.115e+001	1.777e+001	1.146e+001	2.655e+000	2.200e+001	7.100e+001
4	1.964e+001	1.710e+001	9.666e+000	2.467e+000	2.300e+001	7.200e+001
5	1.844e+001	1.644e+001	8.344e+000	2.315e+000	2.400e+001	7.400e+001
6	1.687e+001	1.525e+001	7.209e+000	2.120e+000	2.500e+001	7.600e+001
7	1.637e+001	1.527e+001	5.895e+000	2.055e+000	2.600e+001	7.800e+001
8	1.619e+001	1.529e+001	5.326e+000	2.035e+000	2.700e+001	8.000e+001
9	1.452e+001	1.378e+001	4.591e+000	1.824e+000	2.800e+001	8.200e+001
0	1.312e+001	1.257e+001	3.754e+000	1.648e+000	2.900e+001	8.400e+001
1	1.133e+001	1.085e+001	3.282e+000	1.424e+000	3.000e+001	8.600e+001
2	1.004e+001	9.695e+000	2.599e+000	1.260e+000	3.100e+001	8.800e+001
3	8.349e+000	8.068e+000	2.072e+000	1.049e+000	3.200e+001	9.000e+001
4	6.039e+000	5.867e+000	1.429e+000	7.580e-001	3.300e+001	9.200e+001
5	3.680e+000	3.537e+000	1.015e+000	4.623e-001	3.400e+001	9.400e+001
6	6.117e+000	5.990e+000	1.242e+000	7.690e-001	3.500e+001	9.600e+001
7	4.804e+000	4.732e+000	8.250e-001	6.034e-001	3.600e+001	9.800e+001
8	4.255e+000	4.168e+000	8.522e-001	5.348e-001	3.700e+001	1.000e+002
9	2.911e+000	2.779e+000	8.654e-001	3.656e-001	3.800e+001	1.020e+002
0	1.943e+000	1.866e+000	5.382e-001	2.441e-001	3.900e+001	1.040e+002
1	2.467e+000	2.370e+000	6.835e-001	3.098e-001	4.000e+001	1.060e+002
2	3.132e+000	2.968e+000	9.984e-001	3.935e-001	4.100e+001	1.070e+002
3	3.218e+000	3.077e+000	9.418e-001	4.042e-001	4.200e+001	1.100e+002
4	3.423e+000	3.173e+000	1.283e+000	4.300e-001	4.300e+001	1.110e+002
5	3.748e+000	3.419e+000	1.536e+000	4.705e-001	4.400e+001	1.140e+002
6	2.625e+000	2.363e+000	1.143e+000	3.297e-001	4.500e+001	1.150e+002
7	3.913e+000	3.565e+000	1.613e+000	4.913e-001	4.600e+001	1.170e+002
8	4.217e+000	3.600e+000	2.197e+000	5.297e-001	4.700e+001	1.190e+002
9	5.504e+000	4.940e+000	2.426e+000	6.916e-001	4.800e+001	1.210e+002
0	1.163e+001	1.094e+001	3.950e+000	1.460e+000	4.900e+001	1.230e+002

NASA FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT1-3



Rheometrics RECAP 11

Experiment No. : 11 Sample No. : 1

File:

A FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT1-3

Operator : CP

Date and Time : Tuesday, August 19, 1986 - 12:08:02

Operating Mode : DYNAMIC

Test Type : CURE

Geometry : DISK & PLATE

RADIUS : 25.00

GAP : 0.50

Notes :

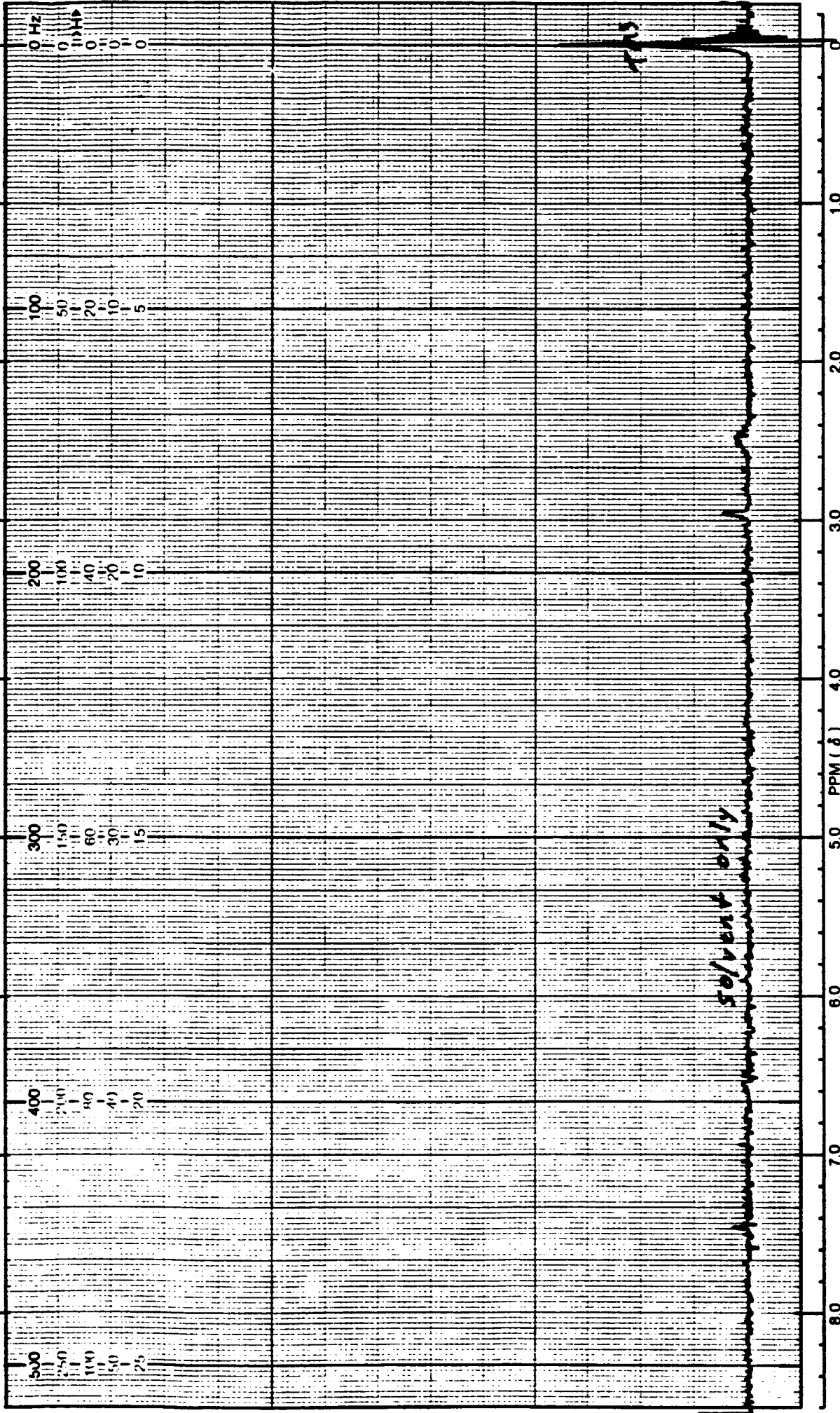
Strain = 50%

Frequency = 10 RAD/SEC

ORIGINAL PAGE IS  
OF POOR QUALITY

ETA*	ETA'	ETA"	TORQUE	TIME	TEMP
POISE	POISE	POISE	GRAMS-CM	MIN.	DEG. C
1.471e+002	1.349e+002	3.847e+001	1.847e+001	2.000e+001	3.000e+001
1.259e+002	1.172e+002	4.595e+001	1.581e+001	1.000e+000	3.100e+001
1.148e+002	1.062e+002	4.348e+001	1.440e+001	2.000e+000	3.200e+001
1.046e+002	9.552e+001	4.271e+001	1.313e+001	3.000e+000	3.400e+001
9.263e+001	8.327e+001	4.057e+001	1.163e+001	4.000e+000	3.600e+001
8.269e+001	7.285e+001	3.912e+001	1.037e+001	5.000e+000	3.700e+001
7.314e+001	6.306e+001	3.704e+001	9.180e+000	6.000e+000	3.900e+001
6.589e+001	5.563e+001	3.531e+001	8.267e+000	7.000e+000	4.100e+001
5.923e+001	4.858e+001	3.389e+001	7.434e+000	8.000e+000	4.300e+001
5.370e+001	4.271e+001	3.255e+001	6.746e+000	9.000e+000	4.500e+001
4.883e+001	3.791e+001	3.079e+001	6.126e+000	1.000e+001	4.700e+001
4.458e+001	3.336e+001	2.957e+001	5.596e+000	1.100e+001	4.900e+001
4.110e+001	2.968e+001	2.843e+001	5.157e+000	1.200e+001	5.100e+001
3.834e+001	2.700e+001	2.722e+001	4.813e+000	1.300e+001	5.300e+001
3.601e+001	2.475e+001	2.616e+001	4.518e+000	1.400e+001	5.500e+001
3.331e+001	2.269e+001	2.438e+001	4.181e+000	1.500e+001	5.700e+001
3.137e+001	2.154e+001	2.281e+001	3.940e+000	1.600e+001	5.900e+001
2.890e+001	2.021e+001	2.066e+001	3.628e+000	1.700e+001	6.100e+001
2.730e+001	1.954e+001	1.906e+001	3.428e+000	1.800e+001	6.300e+001
2.601e+001	1.895e+001	1.780e+001	3.264e+000	1.900e+001	6.500e+001
2.474e+001	1.860e+001	1.632e+001	3.108e+000	2.000e+001	6.600e+001
2.352e+001	1.817e+001	1.494e+001	2.954e+000	2.100e+001	6.800e+001
2.191e+001	1.767e+001	1.296e+001	2.752e+000	2.200e+001	7.000e+001
2.068e+001	1.723e+001	1.143e+001	2.595e+000	2.300e+001	7.200e+001
1.923e+001	1.646e+001	9.937e+000	2.416e+000	2.400e+001	7.400e+001
1.798e+001	1.593e+001	8.339e+000	2.257e+000	2.500e+001	7.600e+001
1.633e+001	1.472e+001	7.077e+000	2.051e+000	2.600e+001	7.800e+001
1.497e+001	1.371e+001	6.005e+000	1.881e+000	2.700e+001	8.000e+001
1.346e+001	1.247e+001	5.062e+000	1.690e+000	2.800e+001	8.200e+001
1.216e+001	1.133e+001	4.436e+000	1.528e+000	2.900e+001	8.400e+001
1.119e+001	1.048e+001	3.941e+000	1.406e+000	3.000e+001	8.600e+001
9.831e+000	9.239e+000	3.361e+000	1.235e+000	3.100e+001	8.800e+001
1.202e+001	1.122e+001	4.301e+000	1.508e+000	3.200e+001	9.000e+001
9.617e+000	9.158e+000	2.937e+000	1.208e+000	3.300e+001	9.200e+001
4.823e+000	4.639e+000	1.319e+000	6.062e-001	3.400e+001	9.400e+001
8.066e+000	7.930e+000	1.477e+000	1.013e+000	3.500e+001	9.600e+001
6.802e+000	6.696e+000	1.198e+000	8.550e-001	3.600e+001	9.800e+001
6.423e+000	6.344e+000	9.988e-001	8.066e-001	3.700e+001	1.000e+002
4.400e+000	4.267e+000	1.076e+000	5.529e-001	3.800e+001	1.020e+002
4.481e+000	4.398e+000	8.549e-001	5.624e-001	3.900e+001	1.040e+002
3.917e+000	3.869e+000	6.140e-001	4.922e-001	4.000e+001	1.060e+002
1.527e+000	1.326e+000	7.579e-001	1.917e-001	4.100e+001	1.080e+002
1.580e+000	1.399e+000	7.330e-001	1.985e-001	4.200e+001	1.100e+002
1.811e+000	1.505e+000	1.007e+000	2.273e-001	4.300e+001	1.120e+002
2.179e+000	2.083e+000	6.388e-001	2.738e-001	4.400e+001	1.140e+002
2.088e+000	1.834e+000	9.966e-001	2.623e-001	4.500e+001	1.150e+002
2.328e+000	2.192e+000	7.836e-001	2.924e-001	4.600e+001	1.170e+002
3.996e+000	3.866e+000	1.009e+000	5.026e-001	4.700e+001	1.190e+002
6.370e+000	5.971e+000	2.219e+000	8.005e-001	4.800e+001	1.200e+002

ORIGINAL PAGE IS  
OF POOR QUALITY



SOLVENT  
ONLY  
SCAN

ORIGINAL PAGE IS  
OF POOR QUALITY

REMARKS:

SAMPLE: Solvent

SOLVENT: Unid-d + 0.627%

DEC. LEVEL: \_\_\_\_\_

AUTO ☐

(250)

(500)

( 2 )

( .05 )

MANUAL

SWEEP TIME (SEC): 30 350 500 1000

SWEEP WIDTH (Hz): 25 50 100 250 500

FILTER: 1 2 3 4 5 6 7 8

RF POWER LEVEL: 0.30

SWEEP OFFSET (Hz): 0

SPECTRUM AMPLITUDE: 12.0

INTEGRAL AMPLITUDE: ---

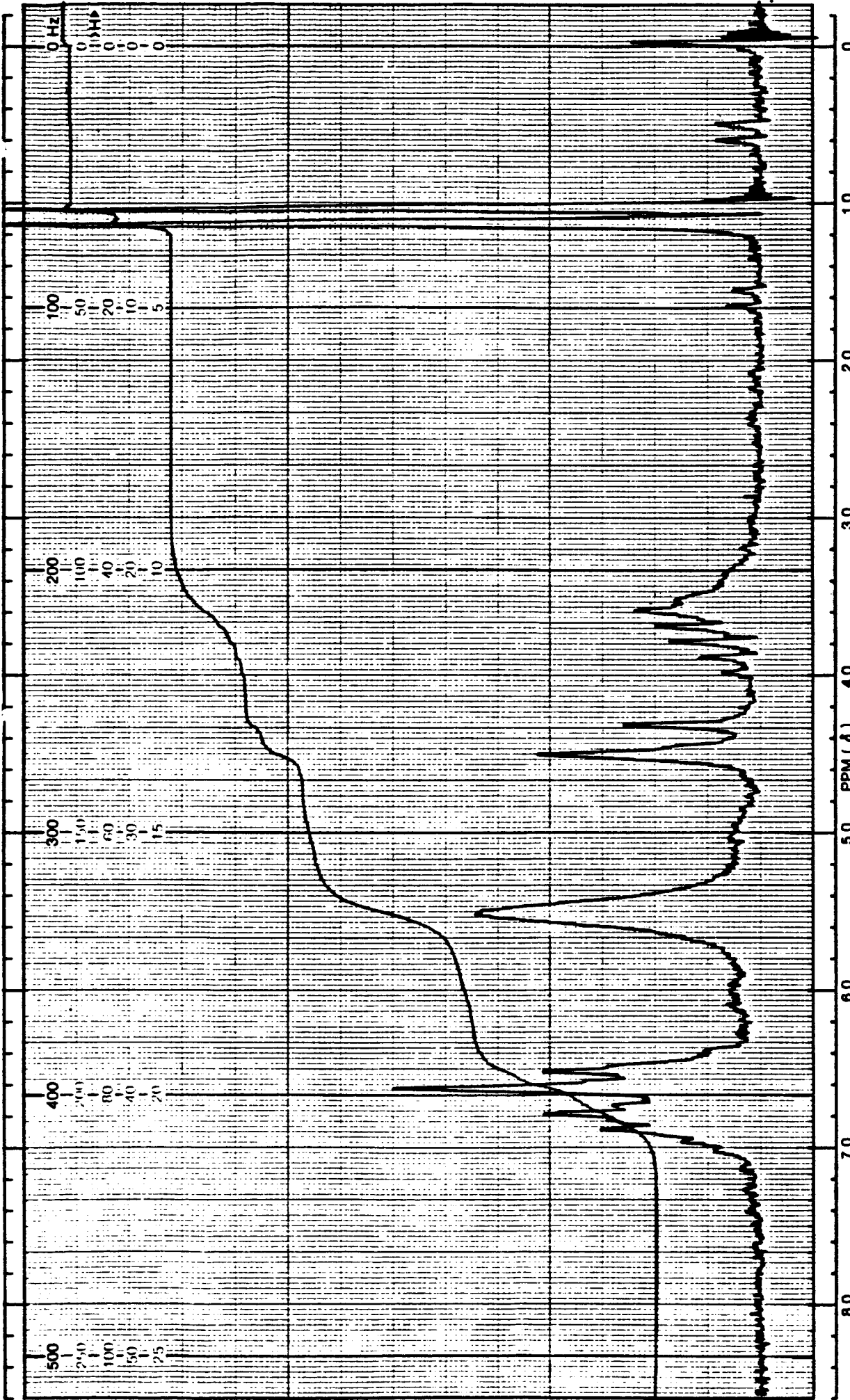
SPINNING RATE (RPS): 30

SPECTRUM NO. 1A of 7  
solvent scan

OPERATOR DGN

DATE: 3-21-86

**NORELL, INC.**  
LANDISVILLE, N.J. 08326  
T60 Phone: (609) 697-0020



SWEEP OFFSET (Hz): 0  
 SPECTRUM AMPLITUDE: 14.0  
 INTEGRAL AMPLITUDE: 5.0  
 SPINNING RATE (RPS): 3.0

MANUAL  
 SWEEP TIME (SEC): 30 250 500 1000  
 SWEEP WIDTH (Hz): 25 50 100 250 500  
 FILTER: 1 2 3 4 5 6 7 8  
 RF POWER LEVEL: 0.25

SAMPLE: 91LD 6441-1 REMARKS: 0.135 gm sample  
 SOLVENT: Unisol-d + 0.5% TMS 0.740 gm solvent  
 DEC. LEVEL: \_\_\_\_\_

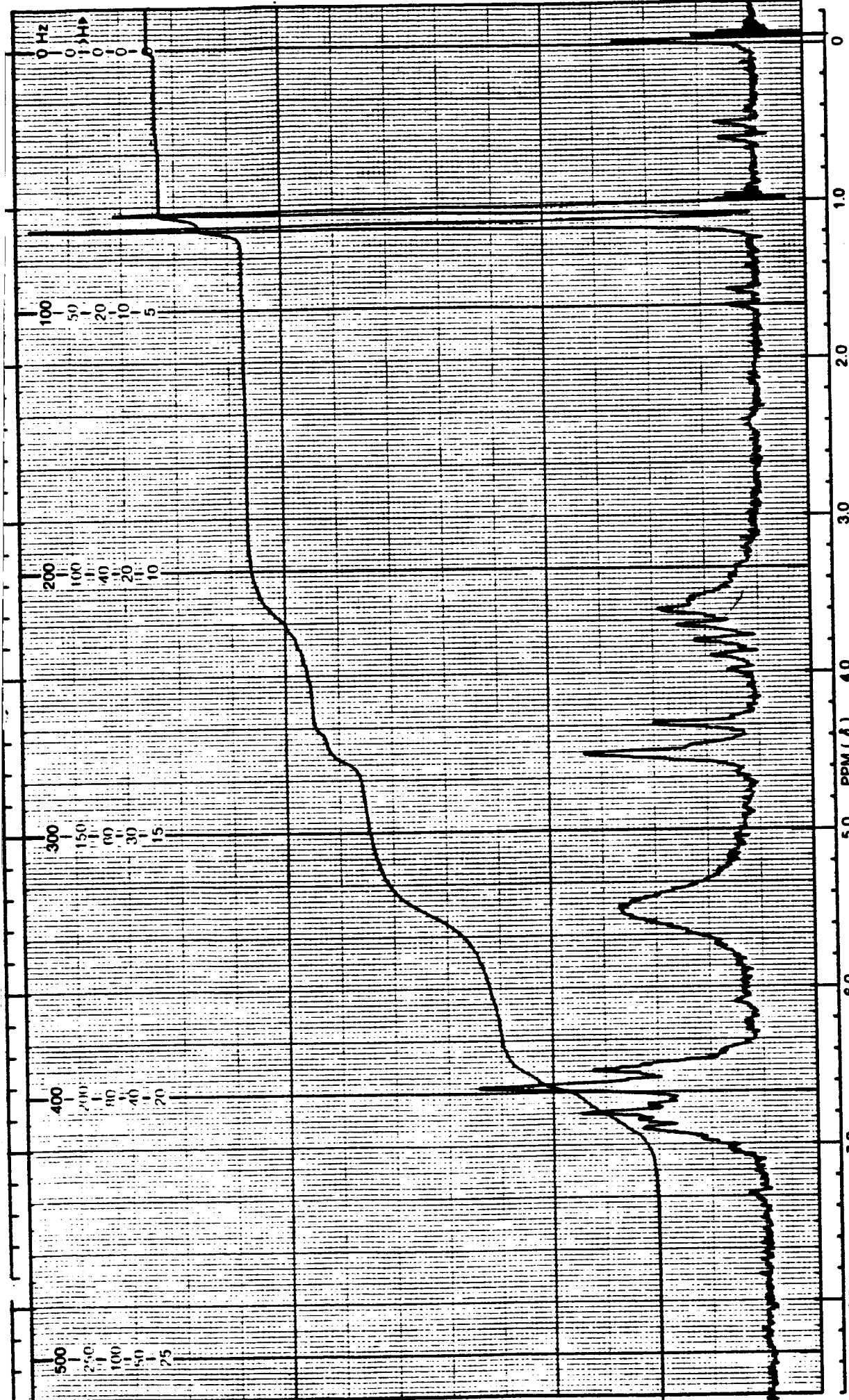
ORIGINAL PAGE IS  
 OF POOR QUALITY

OPERATOR DGW SPECTRUM NO. 1 of 9 91LL  
6441-1

DATE: 3-21-96

**NORELL, INC.**  
 LANDISVILLE, N.J. 08326  
 T60 Phone: (609) 697-0020





REMARKS: 0.104 gm sample  
0.740 gm solvent

SAMPLE: 91LD 641-2  
SOLVENT:  $\text{H}_2\text{O}-d + 0.5\% \text{MS}$   
DEC. LEVEL: \_\_\_\_\_

AUTO ☐ (250)  
(500)  
( 2)  
(.05)

MANUAL ☒  
SWEEP TIME (SEC): 30 15 10 5 2 1  
SWEEP WIDTH (HZ): 25 30 100 250 500  
FILTER: 1 2 3 4 5 6 7 8  
RF POWER LEVEL: 0.25

SWEEP OFFSET (Hz): 0  
SPECTRUM AMPLITUDE: 3.0  
INTEGRAL AMPLITUDE: 5.0  
SPINNING RATE (RPS): 3.0

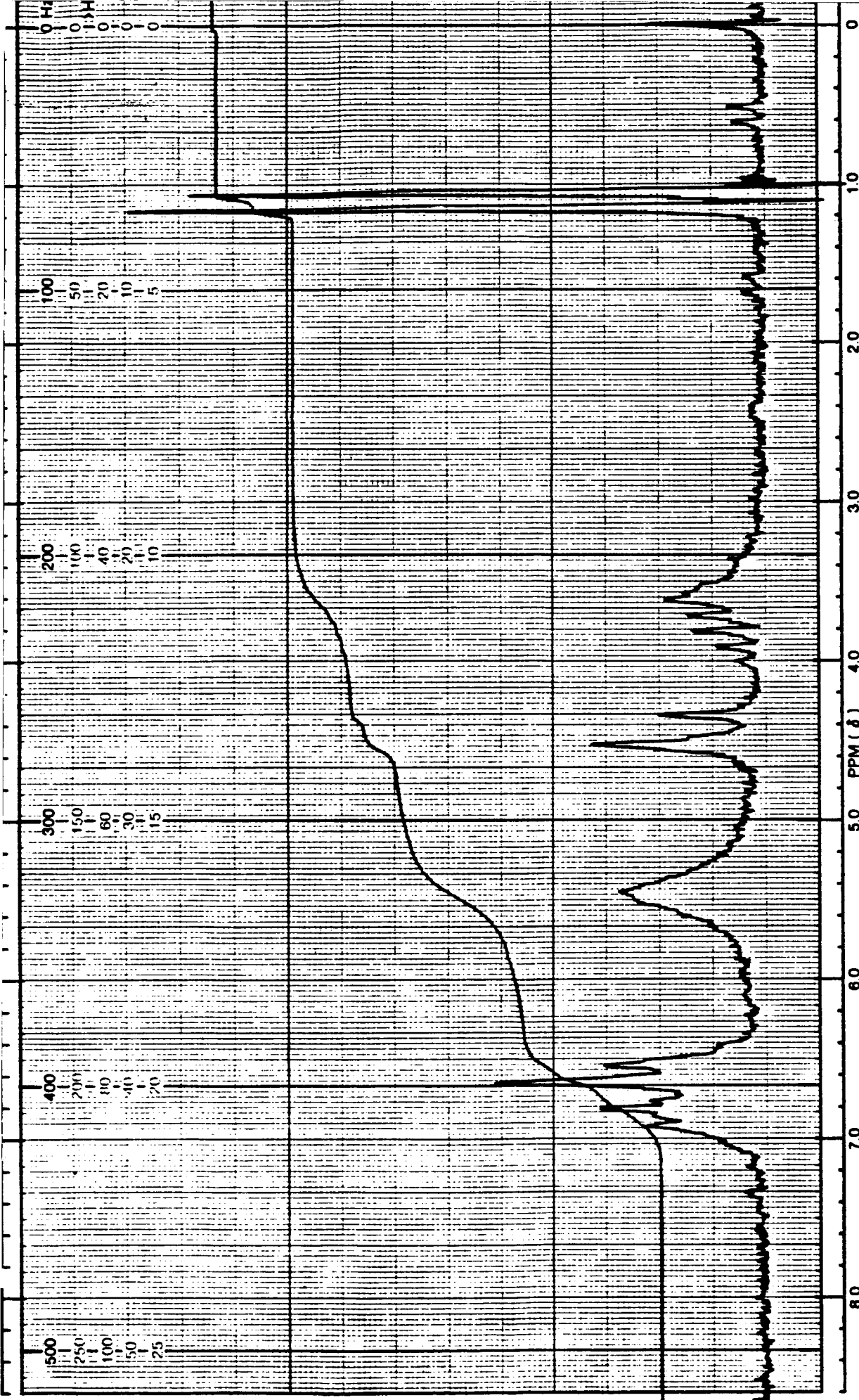
ORIGINAL PAGE IS  
OF POOR QUALITY

SPECTRUM NO. 2019 91LD  
411-2

OPERATOR DEW

DATE: 3-21-86

NORELL, INC.  
LANDISVILLE, N.J. 08328  
T60 Phone: (609) 697-0020



SWEEP OFFSET (Hz): 0  
SPECTRUM AMPLITUDE: 1.0  
INTEGRAL AMPLITUDE: 5.0  
SPINNING RATE (RPS): 3.0

MANUAL  
SWEEP TIME (SEC): 30 75 500 1000  
SWEEP WIDTH (Hz): 25 50 100 250 500  
FILTER: 1 2 3 4 5 6 7 8  
RF POWER LEVEL: 0.25

AUTO ☐  
(250)  
(500)  
( 2)  
( .05)

REMARKS: 0.107 gm sample  
0.779 gm solvent

ORIGINAL PAGE IS  
OF POOR QUALITY

**NORELL, INC.**  
LANDISVILLE, N.J. 08326  
T60 Phone: (609) 697-0020

DATE: 3-21-86

OPERATOR DEN

SPECTRUM NO. 3 of 9 91LD  
6841-3

# TABLE OF CONTENTS

## FABRIC TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

CCA-3 Fabric for NASA Lot# 1

<u>TEST</u>	<u>PAGE</u>
1a. Breaking Strength, WARP.....	1
1b. Breaking Strength, FILL.....	1
2a. Carbon Assay.....	1
2b. Hydrogen Assay.....	2
2c. Nitrogen Assay.....	2
3. Visual Inspection.....	2
4. Specific Gravity.....	2
5. pH.....	3
6. TGA.....	3
7a. Atomic Absorption.....	3
7b. Moisture Content.....	4
7c. Ash Content.....	4
8a. Filament diameter, WARP.....	4
8b. Filament diameter, FILL.....	4
9a. Thread Count, WARP.....	4
9b. Thread Count, FILL.....	5
10a. Areal weight.....	5
10b. Volatiles.....	6
10c. Weight Change on Acetone Wash.....	6

## CHARTS

Visual Inspection.....	3A - 3G
TGA.....	6A - 6N



## FABRIC TESTING

NAS8-36298

U.S. POLYMERIC O.E. 71108

CCA-3 Fabric for NASA Lot# 1

1a. Breaking Strength, lbs/in, WARP  
ASTM D1682

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
PICK	31	36	33
CENTER	36	42	36
PLAIN	<u>36</u>	<u>35</u>	<u>37</u>
AVG.	34.3	37.7	35.3

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
PICK	35	32	33	32	34	37
CENTER	33	33	32	31	32	30
PLAIN	<u>37</u>	<u>32</u>	<u>33</u>	<u>33</u>	<u>28</u>	<u>32</u>
AVG.	35.0	32.3	32.7	32.0	31.3	33.0

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
PICK	34	32	28	33	32	33.0
CENTER	30	30	30	31	23	32.1
PLAIN	<u>39</u>	<u>24</u>	<u>28</u>	<u>31</u>	<u>31</u>	<u>32.6</u>
AVG.	34.3	28.7	28.7	31.7	28.7	32.5

1b. Breaking Strength, lbs/in, FILL  
ASTM D1682

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
PICK	14	26	17
CENTER	12	33	24
PLAIN	<u>15</u>	<u>25</u>	<u>25</u>
AVG.	13.7	28.0	22.0

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
PICK	22	41	28	18	27	21
CENTER	24	31	24	25	35	24
PLAIN	<u>27</u>	<u>30</u>	<u>26</u>	<u>22</u>	<u>27</u>	<u>26</u>
AVG.	24.3	34.0	26.0	21.7	29.7	23.7

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
PICK	22	27	25	32	23	24.5
CENTER	18	23	24	26	22	24.6
PLAIN	<u>21</u>	<u>23</u>	<u>26</u>	<u>29</u>	<u>24</u>	<u>24.7</u>
AVG.	20.3	24.3	25.0	29.0	23.0	24.6

2a. Carbon Assay, %  
MDQAI 5560

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
PICK	97.2	97.5	97.8
CENTER	97.2	97.0	97.2
PLAIN	<u>97.0</u>	<u>96.8</u>	<u>97.1</u>
AVG.	97.13	97.10	97.37

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
PICK	97.2	97.6	97.2	97.0	96.9	97.2
CENTER	97.5	97.7	97.5	97.5	97.8	96.8
PLAIN	<u>97.0</u>	<u>98.1</u>	<u>97.9</u>	<u>97.9</u>	<u>97.7</u>	<u>97.1</u>
AVG.	97.23	97.80	97.53	97.47	97.47	97.03

CCA-3 Fabric for NASA Lot# 1

## 2a. Carbon Assay, % (CONTINUED)

MDQAI 5560

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
PICK	97.3	97.1	97.2	97.3	96.5	97.21
CENTER	96.8	97.2	97.2	97.0	96.8	97.23
PLAIN	96.6	97.3	97.3	97.1	96.8	97.26
AVG.	96.90	97.20	97.23	97.13	96.70	97.24

## 2b. Hydrogen Assay, %

MDQAI 5560

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
PICK	.12	.15	.14
CENTER	.13	.13	.14
PLAIN	.12	.14	.15
AVG.	.123	.140	.143

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
PICK	.14	.13	.15	.13	.12	.12
CENTER	.14	.12	.14	.12	.10	.11
PLAIN	.13	.13	.14	.12	.12	.12
AVG.	.137	.127	.143	.123	.113	.117

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
PICK	.14	.12	.14	.14	.15	.135
CENTER	.14	.11	.12	.13	.15	.127
PLAIN	.10	.12	.12	.13	.15	.128
AVG.	.127	.117	.127	.133	.150	.130

## 2c. Nitrogen Assay, %

MDQAI 5560

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
PICK	.7	.9	.8
CENTER	.6	1.0	1.0
PLAIN	.8	.9	1.0
AVG.	.70	.93	.93

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
PICK	.8	.8	.8	1.0	.8	.9
CENTER	.9	.8	.9	.8	.8	.9
PLAIN	.8	.9	.9	.8	.8	.8
AVG.	.83	.83	.87	.87	.80	.87

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
PICK	.9	.8	.9	.8	.5	.82
CENTER	.8	.7	.7	1.0	1.0	.85
PLAIN	.7	.6	.8	.8	.8	.81
AVG.	.80	.70	.80	.87	.80	.83

## 3. Visual Inspection

QC1-102

See Charts 3A-3G

## 4. Specific Gravity, Units

PTM-84

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
	2.8839	3.3794	2.9594
	2.8019	3.1987	2.9426
	2.8684	3.2980	2.9046
AVG.	2.851	3.292	2.936

(NOTE: Results are not reliable due to surface activity)

CCA-3 Fabric for NASA Lot# 1

## 4. Specific Gravity, Units (CONTINUED)

PTM-84

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
	2.6595	3.0460	2.7472	3.3713	2.9225	3.0070
	2.6939	2.9854	2.7913	3.3083	3.0333	2.9056
	<u>2.7766</u>	<u>3.0506</u>	<u>2.7241</u>	<u>3.3380</u>	<u>2.9532</u>	<u>3.0354</u>
AVG.	2.710	3.027	2.754	3.338	2.970	2.981

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
	3.2092	2.4052	2.3972	2.7704	3.5702	2.9516
	3.1681	2.3583	2.3264	2.7725	3.4908	2.9127
	<u>3.3783</u>	<u>2.4256</u>	<u>2.3317</u>	<u>2.7278</u>	<u>3.5566</u>	<u>2.9546</u>
AVG.	3.252	2.396	2.352	2.757	3.539	2.940

5. pH, Units  
CTM-24B

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
	8.5	8.4	8.0
	<u>8.4</u>	<u>8.3</u>	<u>8.0</u>
AVG.	8.45	8.35	8.00

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
	8.0	8.5	7.6	8.2	8.2	8.4
	<u>8.0</u>	<u>8.4</u>	<u>7.6</u>	<u>8.0</u>	<u>8.3</u>	<u>8.4</u>
AVG.	8.00	8.45	7.60	8.10	8.25	8.40

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
	8.4	9.3	9.3	9.2	8.8	8.49
	<u>8.4</u>	<u>9.3</u>	<u>9.2</u>	<u>9.2</u>	<u>8.6</u>	<u>8.43</u>
AVG.	8.40	9.30	9.25	9.20	8.70	8.46

6. TGA, °C at 50% Weight Loss  
CTM-51 (AIR)

	<u>SET UP #1</u>	<u>SET UP #2</u>
1-1S	673	1-1E 576
1-2S	696	1-2E 584
1-3S	701	1-3E 581
1-5S	698	1-4S 608
1-6S	697	1-4E 583
<u>1-7S</u>	<u>696</u>	1-5E 600
AVG.	694	1-6E 579
		<u>1-7E</u> 583
		AVG. 587

See Chart 6A-6N

7a. Atomic Absorption, ppm  
CTM-53B

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
Na	848	888	754
K	48	52	41
Ca	5	4	5
Mg	56	62	45
<u>Li</u>	<u>0</u>	<u>0</u>	<u>0</u>
AVG.	957	1006	845

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
Na	652	687	737	584	579	488
K	33	48	44	35	33	33
Ca	4	5	8	7	6	6
Mg	72	76	62	83	56	63
<u>Li</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
AVG.	761	816	851	709	674	590

CCA-3 Fabric for NASA Lot# 1

## 7a. Atomic Absorption, ppm (CONTINUED)

CTM-53B

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
Na	512	520	544	726	788	664.8
K	43	37	34	40	38	39.9
Ca	4	8	4	4	7	5.5
Mg	54	72	45	33	32	57.9
Li	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
AVG.	613	637	627	803	865	768.1

## 7b. Moisture Content, %

CTM-53B

#1-1S	2.504	#1-4E	3.026
#1-1E	2.572	#1-5S	3.012
#1-2S	2.862	#1-5E	3.074
#1-2E	2.873	#1-6S	2.863
#1-3S	3.169	#1-6E	2.946
#1-3E	2.813	#1-7S	3.021
#1-4S	3.183	#1-7E	2.383
LOT# 1 AVERAGE			2.879

## 7c. Ash Content, %

CTM-53B

#1-1S	.379	#1-4E	.239
#1-1E	.380	#1-5S	.225
#1-2S	.794	#1-5E	.233
#1-2E	.273	#1-6S	.224
#1-3S	.283	#1-6E	.243
#1-3E	.289	#1-7S	.312
#1-4S	.209	#1-7E	.285
LOT# 1 AVERAGE			.312

## 8a. Filament diameter, microns, WARP

S.E.M. procedure

(diameters are an average

10 measurements)

	<u>#1-1S</u>	<u>#1-2S</u>	<u>#1-3S</u>
AVERAGE	11.08	10.10	10.50
Minimum	7.85	7.95	8.90
Maximum	12.75	11.90	13.30
Std. Dev	1.58	1.28	1.21

	<u>#1-4S</u>	<u>#1-5S</u>	<u>#1-6S</u>	<u>#1-7S</u>	<u>LOT1 AVG</u>
AVERAGE	10.44	11.34	10.20	10.23	10.55
Minimum	9.35	9.85	8.00	9.50	7.85
Maximum	13.20	12.75	11.60	11.00	13.30
Std. Dev	1.07	0.87	1.13	0.58	1.18

## 8b. Filament diameter, microns, FILL

S.E.M. procedure

(diameters are an average

of 10 measurements)

	<u>1-1S</u>
AVERAGE	10.72
Minimum	9.85
Maximum	12.25
Std. Dev	0.66

## 9a. Thread Count, per inch, WARP

PTH-5A

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
	52	53	52
	52	52	52
	53	52	52
	53	52	52
	<u>52</u>	<u>51</u>	<u>52</u>
AVG.	52.4	52.0	52.0

CCA-3 Fabric for NASA Lot# 1

## 9a. Thread Count, per inch, WARP (CONTINUED)

PTM-5A

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
	53	51	53	52	52	53
	53	52	53	52	53	52
	53	52	52	52	51	53
	52	53	52	52	51	50
	<u>53</u>	<u>53</u>	<u>52</u>	<u>52</u>	<u>52</u>	<u>53</u>
AVG.	52.8	52.2	52.4	52.0	51.8	52.2
	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
	53	53	53	53	51	52.4
	53	53	52	52	51	52.3
	50	52	53	52	53	52.1
	53	52	53	53	50	52.0
	<u>52</u>	<u>52</u>	<u>53</u>	<u>53</u>	<u>51</u>	<u>52.0</u>
AVG.	52.2	52.4	52.8	52.6	51.2	52.2

## 9b. Thread Count, per inch, FILL

PTM-5A

Count, per inch, FILL			<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>	
			49	48	49	
			49	49	49	
			49	49	49	
			49	49	49	
			<u>50</u>	<u>49</u>	<u>49</u>	
		AVG.	49.2	48.8	49.0	
	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
	49	48	48	50	49	50
	49	48	49	49	53	49
	49	49	48	49	49	49
	49	49	48	49	49	50
	<u>49</u>	<u>48</u>	<u>48</u>	<u>49</u>	<u>48</u>	<u>50</u>
AVG.	49.0	48.4	48.2	49.2	49.6	49.6
	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
	50	49	49	49	49	49.0
	49	50	49	49	46	49.1
	49	49	50	49	48	48.9
	50	49	49	49	47	48.9
	<u>49</u>	<u>50</u>	<u>49</u>	<u>49</u>	<u>47</u>	<u>48.9</u>
AVG.	49.4	49.4	49.2	49.0	47.4	49.0

## 10a. Areal weight as received, gm/4x4

PTM-3A

al weight as received, gm/4x4		<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>		
1-3A	LEFT	2.902	3.014	2.977		
	CENTER	2.924	2.973	2.973		
	RIGHT	<u>2.917</u>	<u>2.997</u>	<u>2.987</u>		
	AVG.	2.914	2.995	2.979		
	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
LEFT	2.974	2.834	3.005	2.907	2.949	2.910
CENTER	2.906	2.856	2.997	2.938	2.989	2.864
RIGHT	<u>2.944</u>	<u>2.879</u>	<u>3.021</u>	<u>2.974</u>	<u>2.927</u>	<u>2.899</u>
AVG.	2.941	2.856	3.008	2.940	2.955	2.891



CCA-3 Fabric for NASA Lot# 1

## 10a. Areal weight as received, gm/4x4 (CONTINUED)

PTM-3A

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
LEFT	2.941	2.848	2.975	2.858	3.007	2.936
CENTER	2.914	2.826	2.940	2.830	2.928	2.918
RIGHT	<u>2.956</u>	<u>2.836</u>	<u>2.960</u>	<u>2.868</u>	<u>2.963</u>	<u>2.938</u>
AVG.	2.937	2.837	2.958	2.852	2.966	2.931

## 10b. Volatiles as received, %

PTM-3A

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
LEFT	5.13	6.04	5.24
CENTER	7.46	5.68	6.05
RIGHT	<u>6.48</u>	<u>6.41</u>	<u>5.22</u>
AVG.	6.36	6.04	5.51

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
LEFT	5.55	4.55	5.22	3.16	6.51	6.53
CENTER	4.34	5.74	5.87	5.31	3.85	4.16
RIGHT	<u>4.82</u>	<u>6.43</u>	<u>6.22</u>	<u>7.09</u>	<u>4.10</u>	<u>1.38</u>
AVG.	4.90	5.57	5.77	5.19	4.82	4.02

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
LEFT	3.47	4.42	5.51	3.29	6.95	5.11
CENTER	1.54	3.08	3.71	1.13	3.01	4.35
RIGHT	<u>7.51</u>	<u>1.27</u>	<u>5.47</u>	<u>1.60</u>	<u>4.05</u>	<u>4.86</u>
AVG.	4.17	2.92	4.90	2.01	4.67	4.78

## 10c. Weight Change on Acetone Wash, %

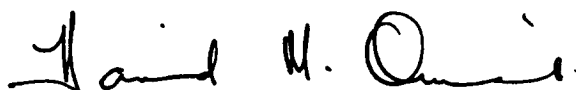
PTM-3A

	<u>#1-1S</u>	<u>#1-1E</u>	<u>#1-2S</u>
LEFT	-.29	-.07	-.18
CENTER	-.48	-.46	-.79
RIGHT	<u>-.44</u>	<u>-.00</u>	<u>-.39</u>
AVG.	-.40	-.18	-.45

	<u>#1-2E</u>	<u>#1-3S</u>	<u>#1-3E</u>	<u>#1-4S</u>	<u>#1-4E</u>	<u>#1-5S</u>
LEFT	-.96	-.78	-1.09	-.07	-.11	.00
CENTER	-.11	-2.19	-.67	-.29	-.35	-.07
RIGHT	<u>-.11</u>	<u>-.89</u>	<u>-.14</u>	<u>-.58</u>	<u>-.29</u>	<u>.03</u>
AVG.	-.39	-1.29	-.63	-.31	-.25	-.01

	<u>#1-5E</u>	<u>#1-6S</u>	<u>#1-6E</u>	<u>#1-7S</u>	<u>#1-7E</u>	<u>LOT1 AVG</u>
LEFT	.00	-.44	.07	.04	.11	-.27
CENTER	.21	.33	.35	.54	.04	-.28
RIGHT	<u>.04</u>	<u>1.68</u>	<u>-.11</u>	<u>.14</u>	<u>-.39</u>	<u>-.10</u>
AVG.	.08	.52	.11	.24	-.08	-.22

U.S. Polymeric



Hamid M. Quraishi, Manager  
Quality Assurance Department

NOTAGG

DATE 5/8/86

LEFT

START SampleFABRIC CCA -3 -43MFG. 18817 HITEOROLL NO. 18817YARDS 133.7POUNDS 81.1ORDER NO. 71108SPECIFICATION ST44 3184-5C2Q.C. FILE # NASA 1-1

## SYMBOLS



- TEAR



- SPOTS OR STAINS



- FOLDS



- EDGE CURL



- TIGHT WEAVE OR SELVAGE



- WEAVE DISTORTION



- VISIBLE PUCKERS



- ONE PUCKER CREASING



- TWO OR MORE CREASINGS

## REMARKS

NASA Roll # 1-1  
START and ENDGRADE Group BR. HANNA

TREATMENT OPERATOR READ UP

HT

LEFT

**NOTE**

4/28/86

FABRIC AC 3 - 43

MFG. .... HITCO

ROLL NO. 1825

~~YARDS~~ 157.5

~~POUNDS~~ --- 97.2

ORDER NO. 71108

SPECIFICATION STW 3/84 - GCN 2

-Q.C. FILE # NASA 1-2

## SYMBOLS

**TEAR**

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**SPOTS OR STAINS**

**FOLDS**

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**EDGE CURL**

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**- TIGHT WEAVE OR SELVAGE**

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- WEAVE DISTORTION

- VISIBLE PUCKERS

V

- ONE PUCKER CREASING

- TWO OR MORE CREASINGS

## REMARKS

NASA Roll# 1-2

START and END

**GRADE**

Group C

QARON

ORIGINAL PAGE IS  
OF POOR QUALITY



FOOTAGE



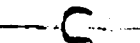



DATE

7/28/86

LEFT

FABRIC CC-3-43MFG. HITCOROLL NO. 18824YARDS 156.0POUNDS 96.4ORDER NO. 7.1108SPECIFICATION STW 3189 SCM 2Q.C. FILE # NASA 1-4

## SYMBOLS

 TEAR SPOTS OR STAINS FOLDS EDGE CURL TIGHT WEAVE OR SELVAGE WEAVE DISTORTION VISIBLE PUCKERS ONE PUCKER CREASING TWO OR MORE CREASINGS

## REMARKS

5-55 W 6" FROM EDGE

60-

NASA Roll # 1-4  
START and ENDGRADE Group B

GARRETT

FootAGG

START Sample	
49 W (3/4" wide)	
104 W	
154 W	146 W
202 W	
227 W	
	295 W
	304 W
327 W	317 W
354 W	
371 W	
377 W	
398 W	
421 W (1/2" wide)	
END Sample	

LEFT

DATE

4/28/86

FABRIC 003-43

MFG. HITA

ROLL NO. 18818

YARDS 150.0

POUNDS 95.9

ORDER NO. 7.1108

SPECIFICATION 9W 3184-ECN 2

Q.C. FILE # NASA 1-5

## SYMBOLS



- TEAR



- SPOTS OR STAINS



- FOLDS



- EDGE CURL



- TIGHT WEAVE OR SELVAGE



- WEAVE DISTORTION



- VISIBLE PUCKERS



- ONE PUCKER CREASING



- TWO OR MORE CREASINGS

## REMARKS

NASA Roll # 1-5

START and END

GRADE Group B

GARCIA

FOOTAGE

DATE

4/28/86

LEFT

START sample

FABRIC QC 3-43

MFG. HITCO

ROLL NO. 18822

YARDS 152.5

POUNDS 96.6

ORDER NO. 71108

SPECIFICATION BTW 3184 SCAN 2

Q.C. FILE # NASA 1-6

SYMBOLS



TEAR



SPOTS OR STAINS



FOLDS



EDGE CURL



TIGHT WEAVE OR SELVAGE



WEAVE DISTORTION



VISIBLE PUCKERS



ONE PUCKER CREASING



TWO OR MORE CREASINGS

REMARKS

NASA Roll # 1-6

START and END

GRADE

Group B

GARCIA

TREATMENT OPERATOR READ UP

25 W

55 W

69 W

86 W

109 W 14 W

130 W

173 W

193 W

217 W

231 SPUN

249 W

265 W

314 W

368 W

433 W

END 457 END sample

FOOTAGE

START	END
136 W	
198 W 180 W	
222 SPICE	
254 W	
306 000	
339 W 371 000	
END 433 END 424 S	

LEFT

DATE 4/28/84

FABRIC OCA 3 43"

MFG. HITCO

ROLL NO. 18812

YARDS 148.5






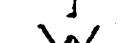



POUNDS 90.3

ORDER NO. 71108

SPECIFICATION STW 4 3184 SCN 2

Q.C. FILE # NASA 1-7

SYMBOLS

-  - TEAR
-  - SPOTS OR STAINS
-  - FOLDS
-  - EDGE CURL
-  - TIGHT WEAVE OR SELVAGE
-  - WEAVE DISTORTION
-  - VISIBLE PUCKERS
-  - ONE PUCKER CREASING
-  - TWO OR MORE CREASINGS

REMARKS

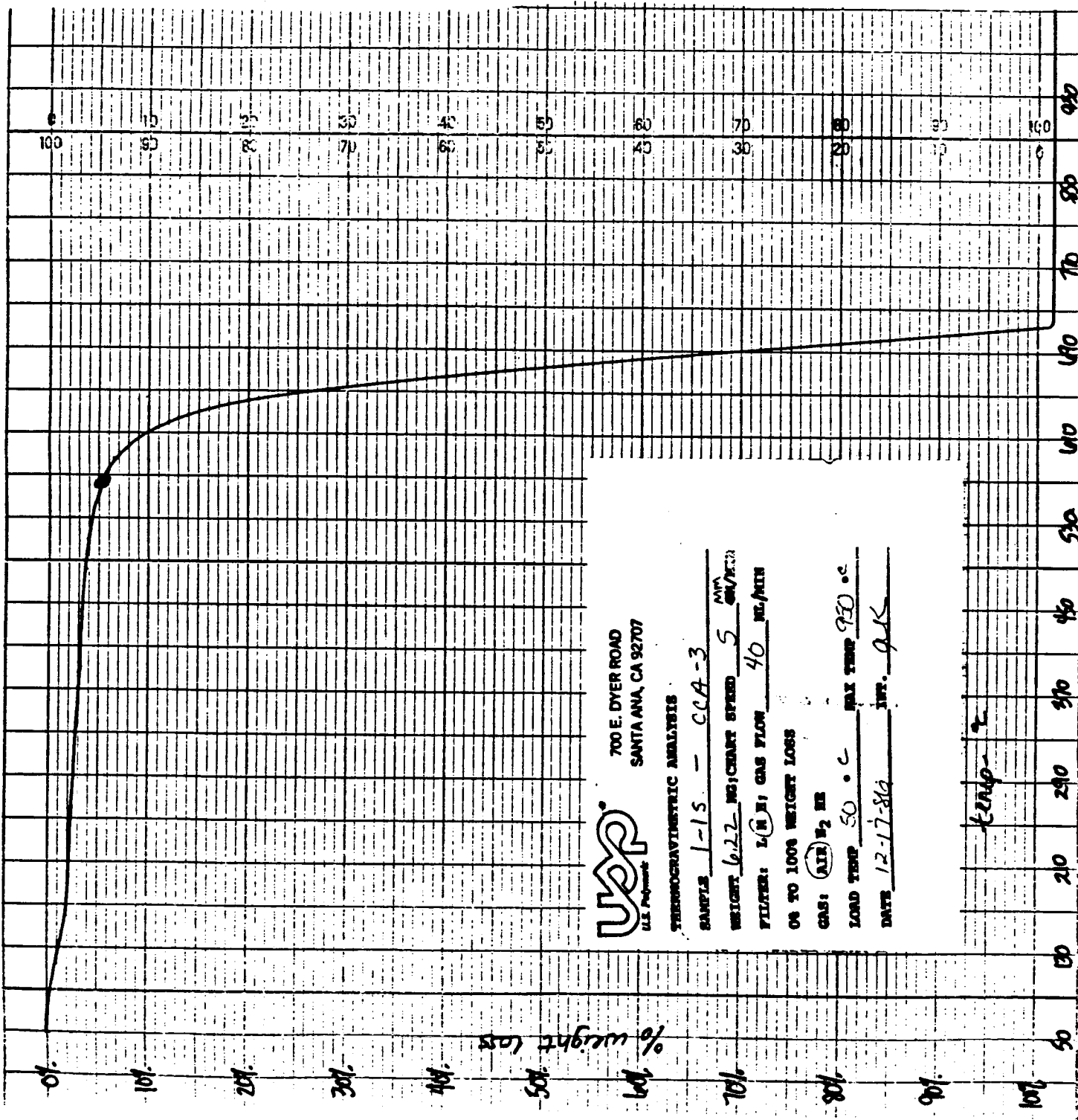
NASA Roll #1-7  
START and END

GRADE Group C

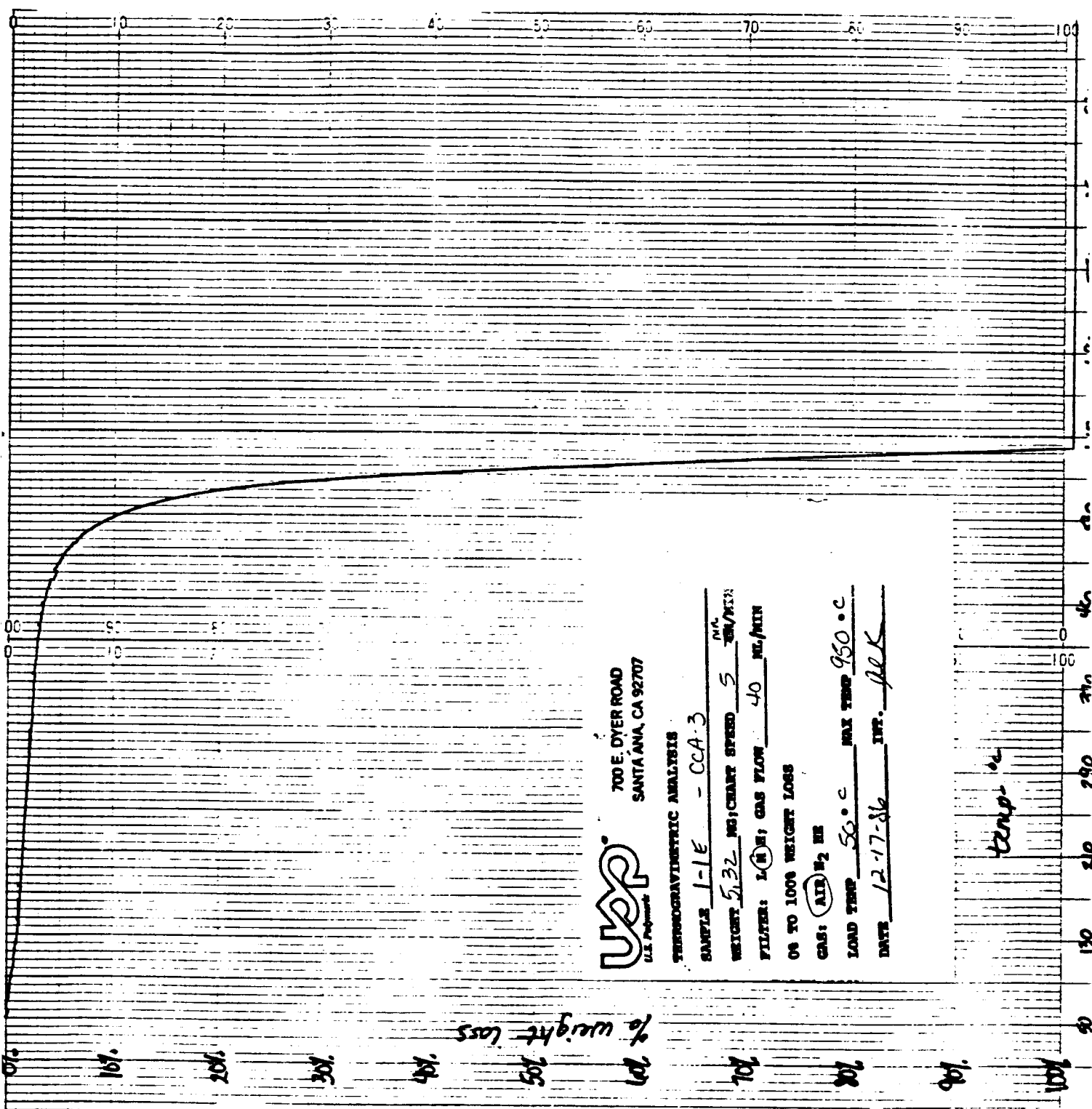
GARCIN



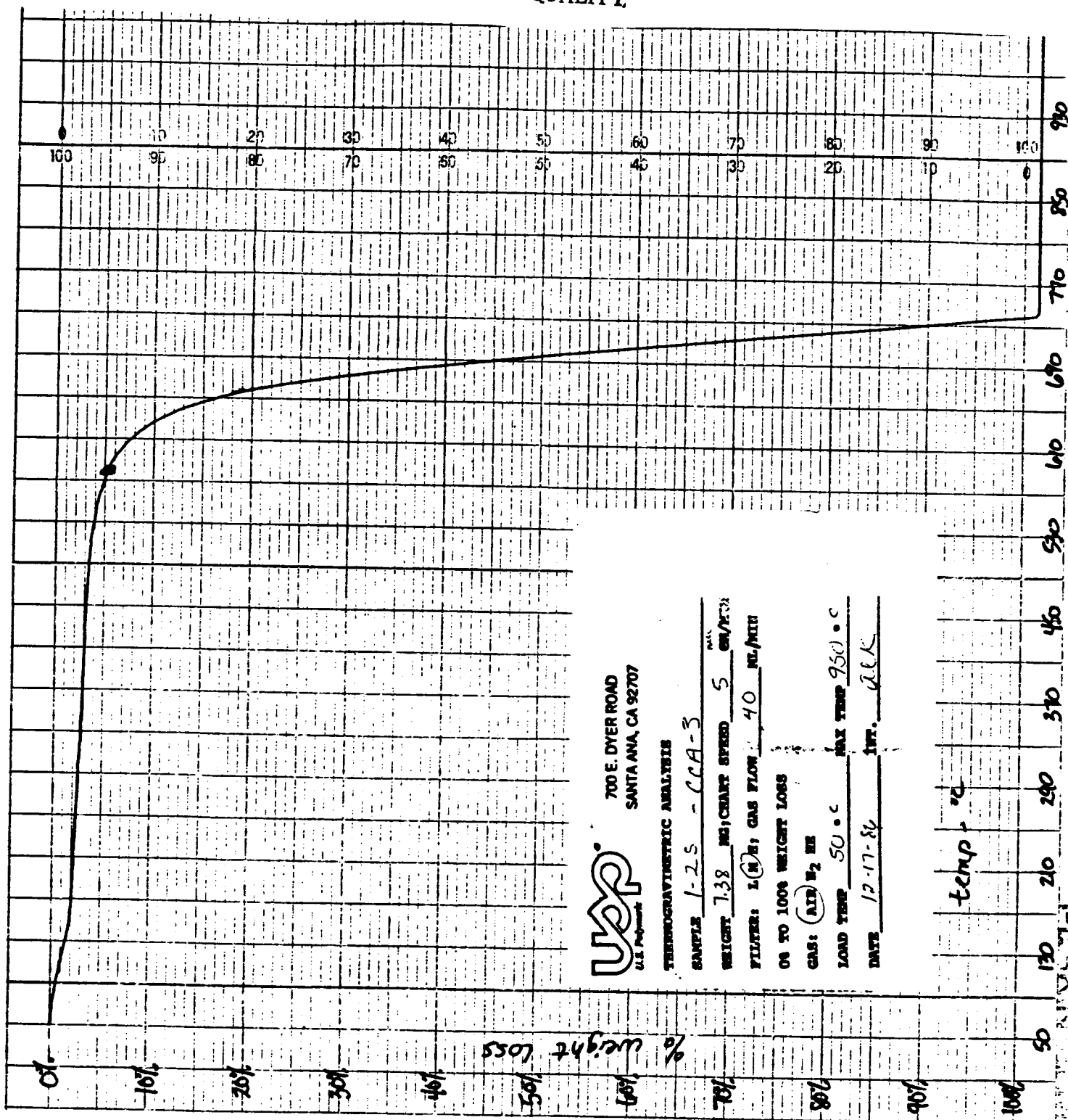
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**UAP**  
U.S. Patents

700 E. DYER ROAD  
SANTA ANA, CA 92707

THERMogrAvImETRIC ANALYSIS

SAMPLE 1-25 - CCA-3

WEIGHT 7.38 MG; CHART SPEED 5 <sup>MIN</sup> CM/PTX

FILTER: 1.0  $\mu$ M; GAS FLOW 40 ML/MIN

0% TO 100% WEIGHT LOSS

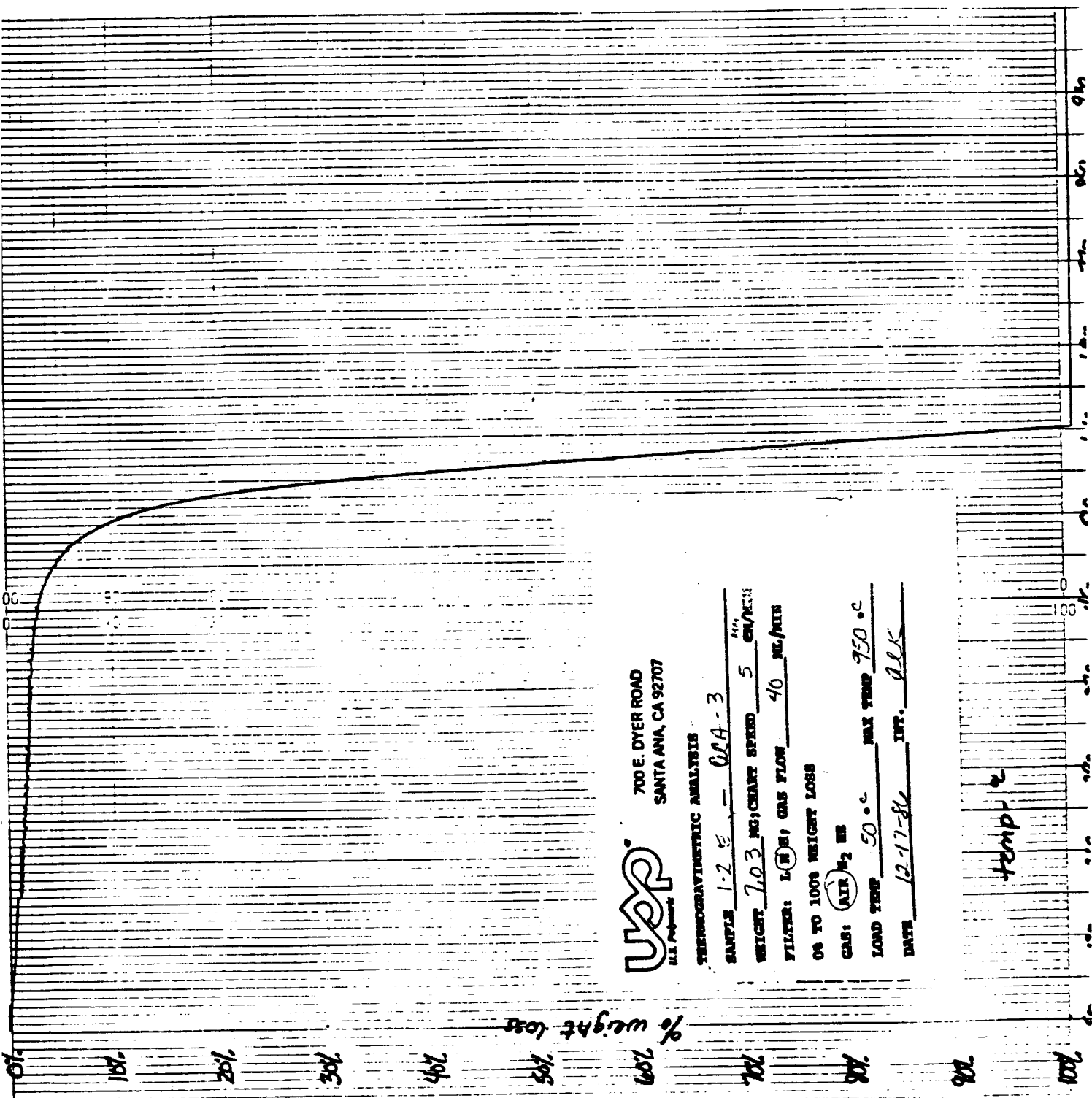
GAS: AIR  $\text{N}_2$  HE

LOAD TEMP 50 °C MAX TEMP 950 °C

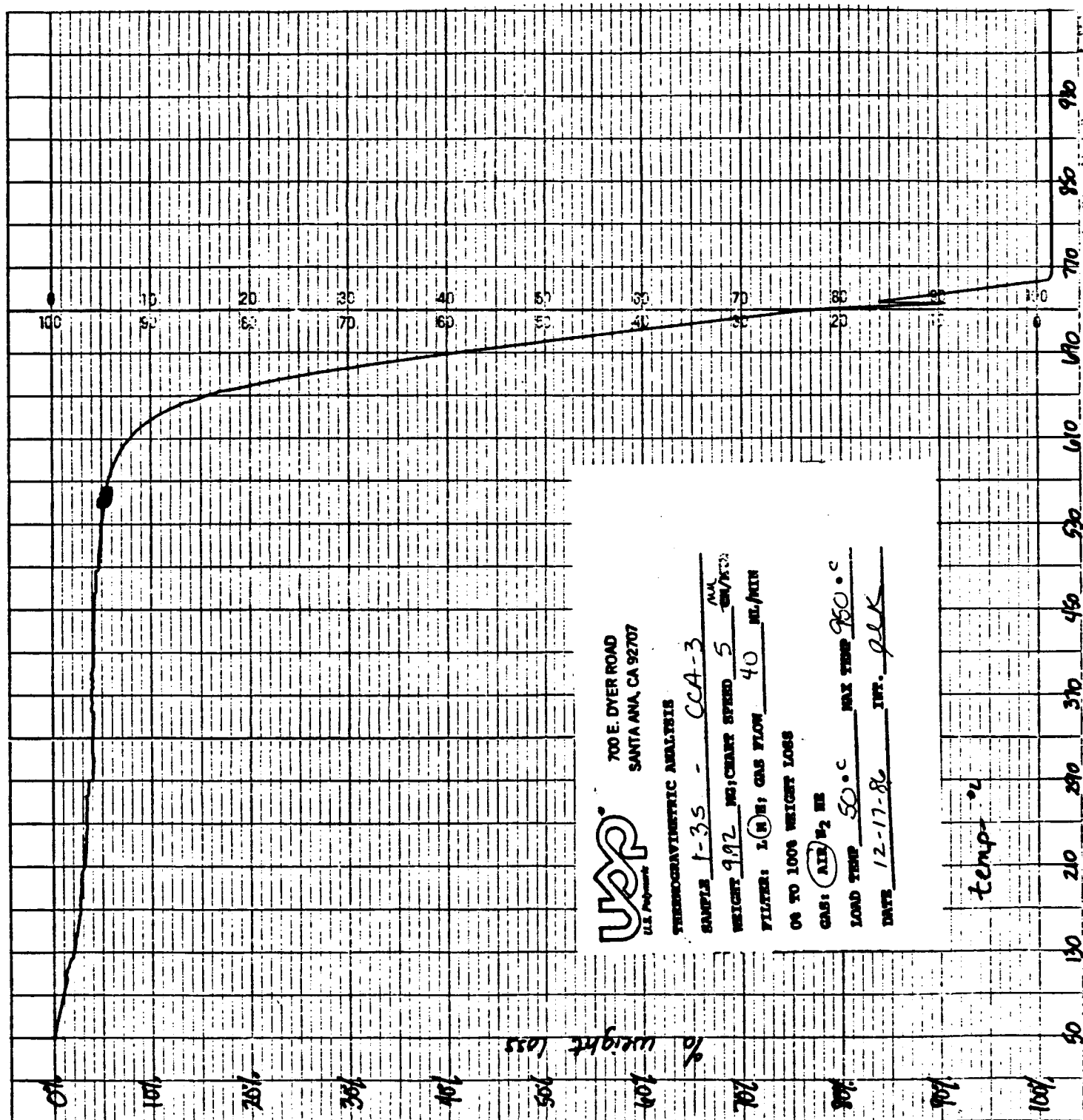
DATE 12-17-86 INT. JKK

temp. °C

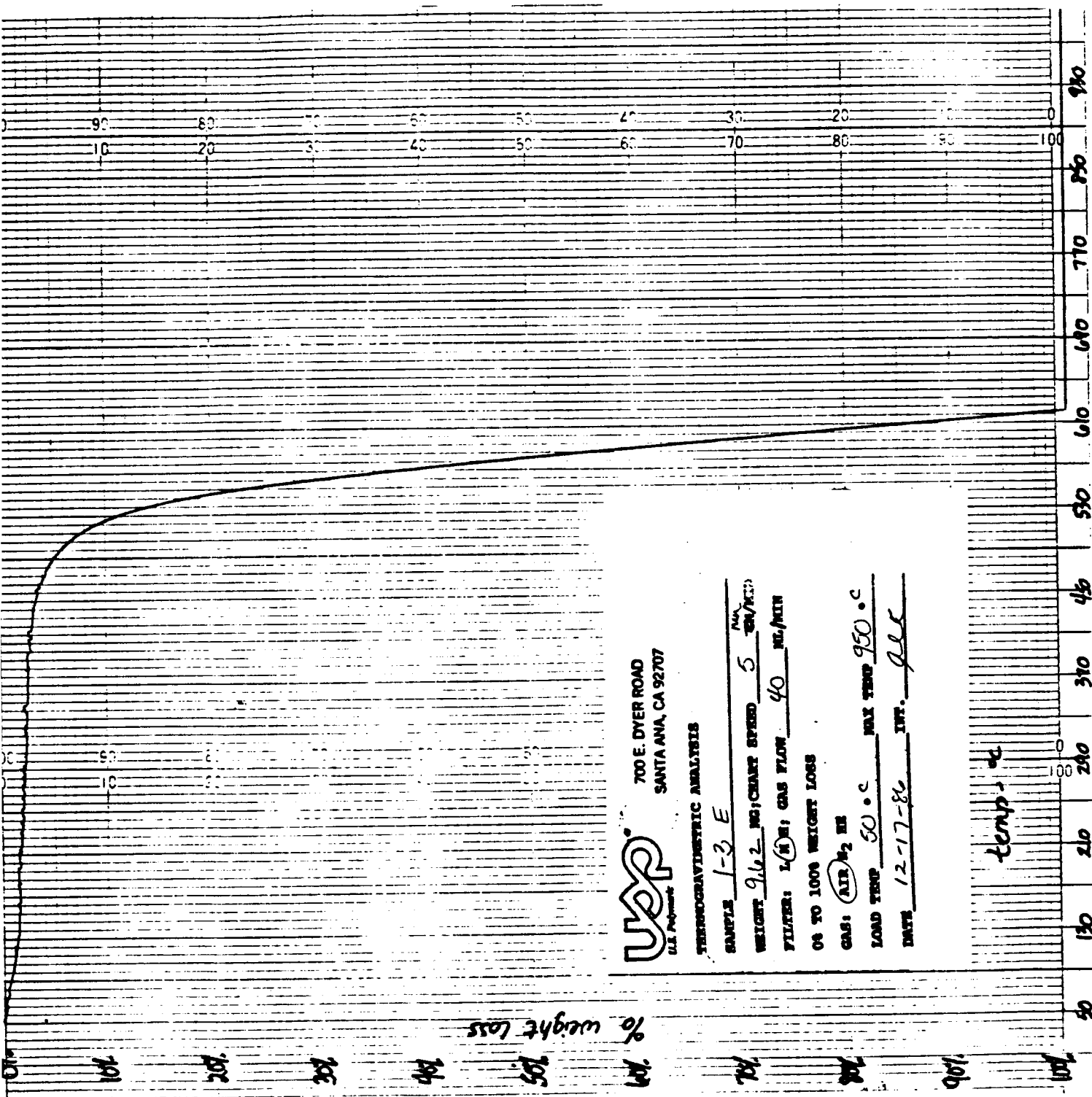
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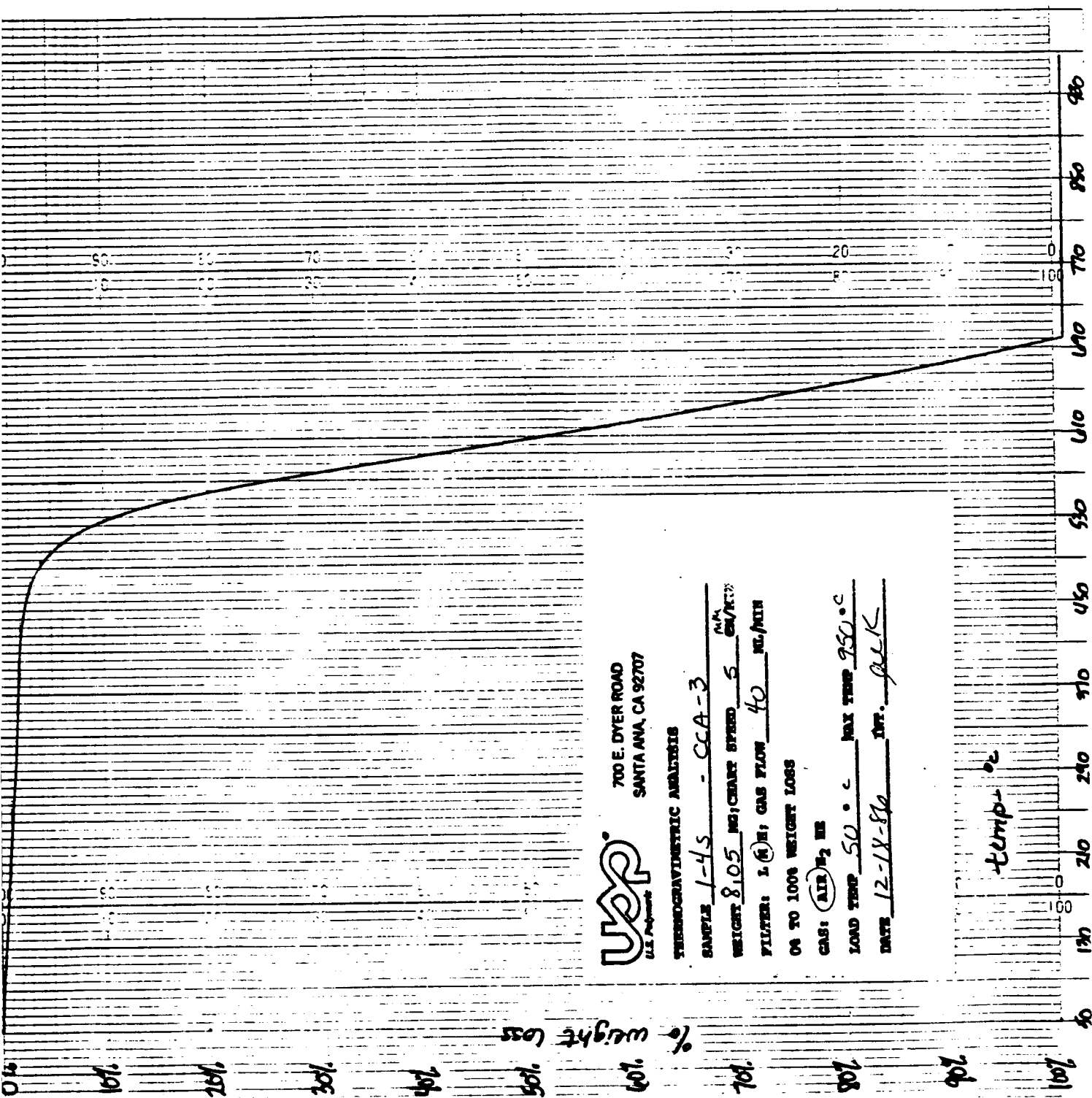
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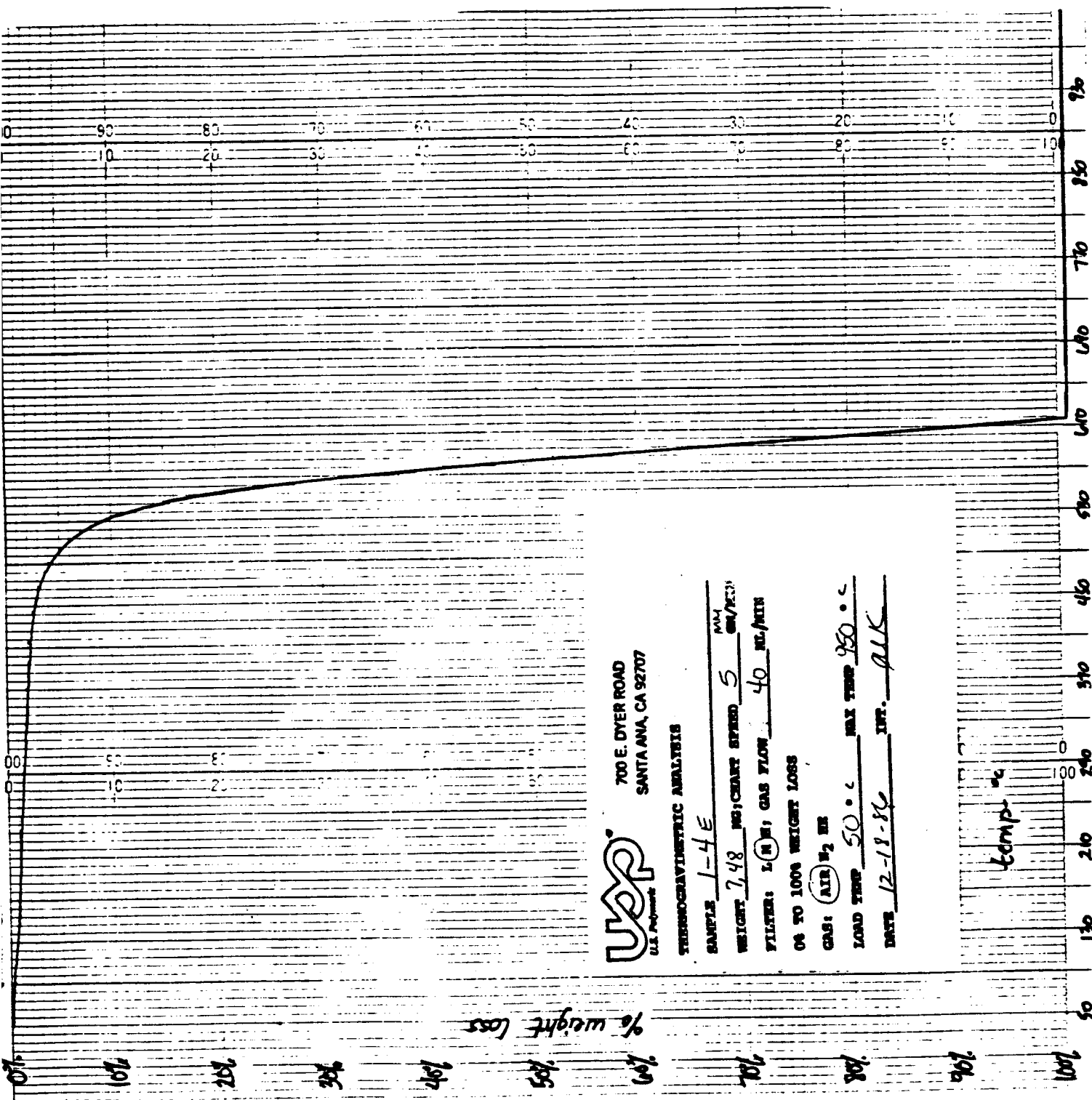
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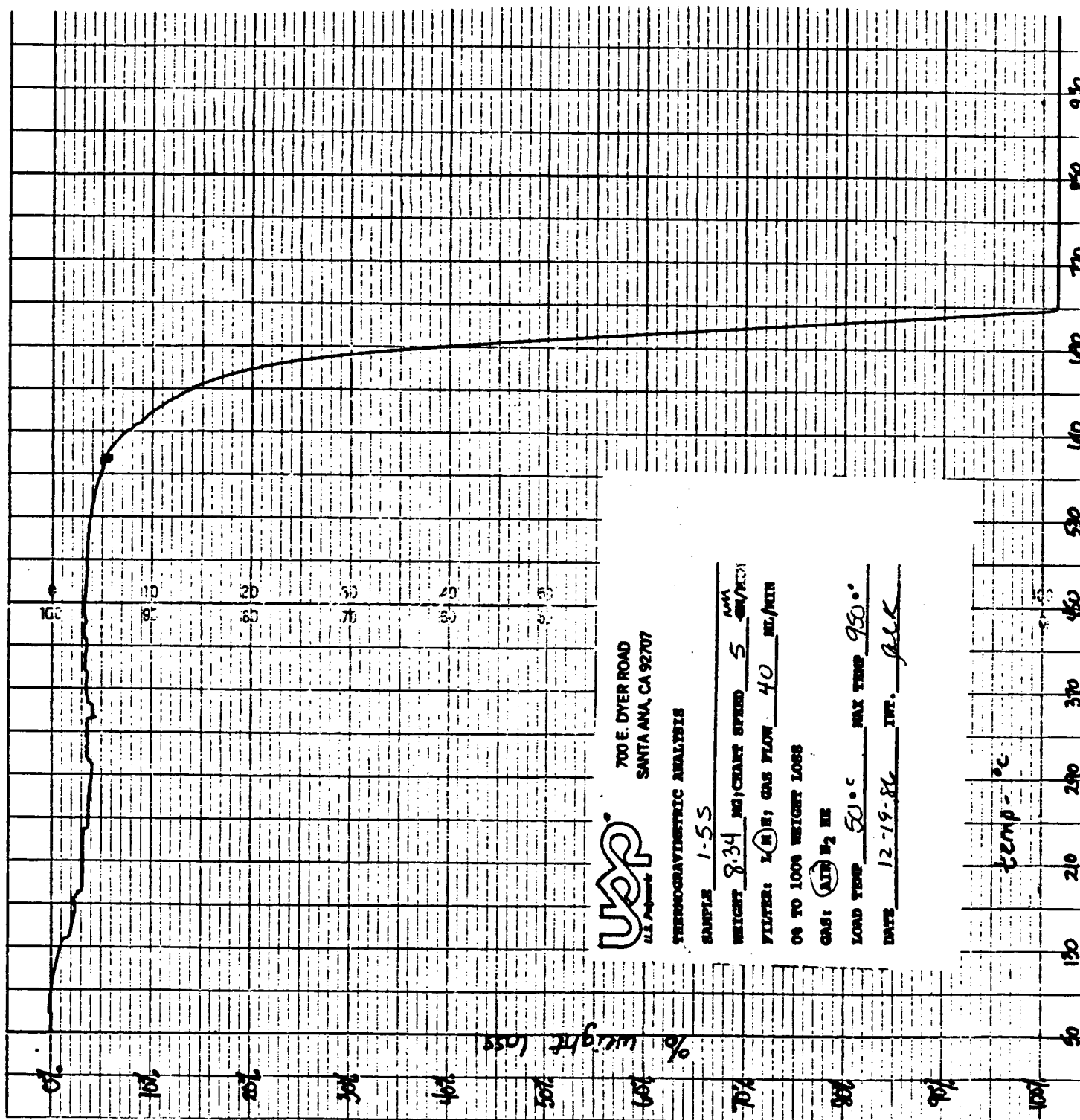
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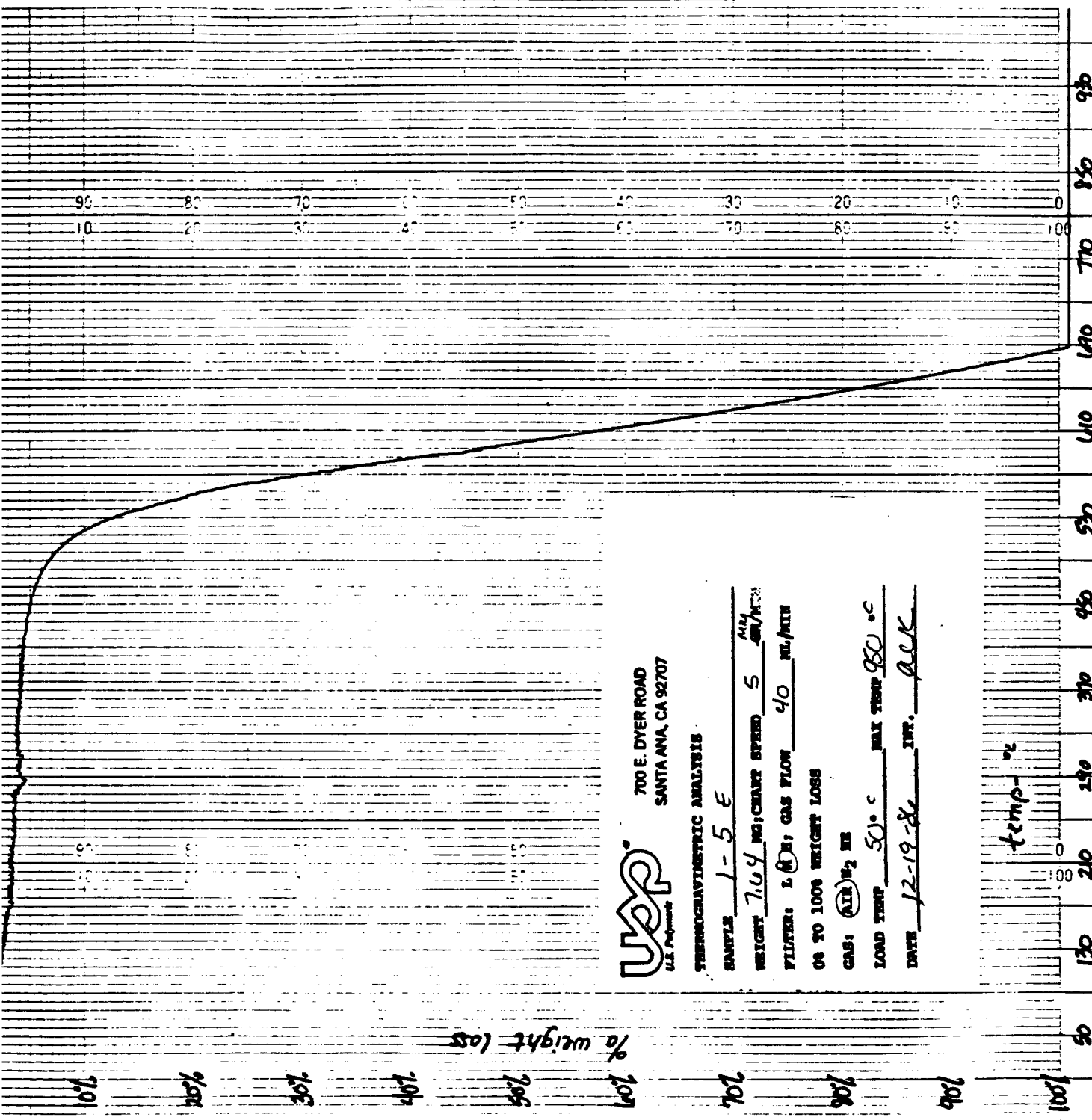
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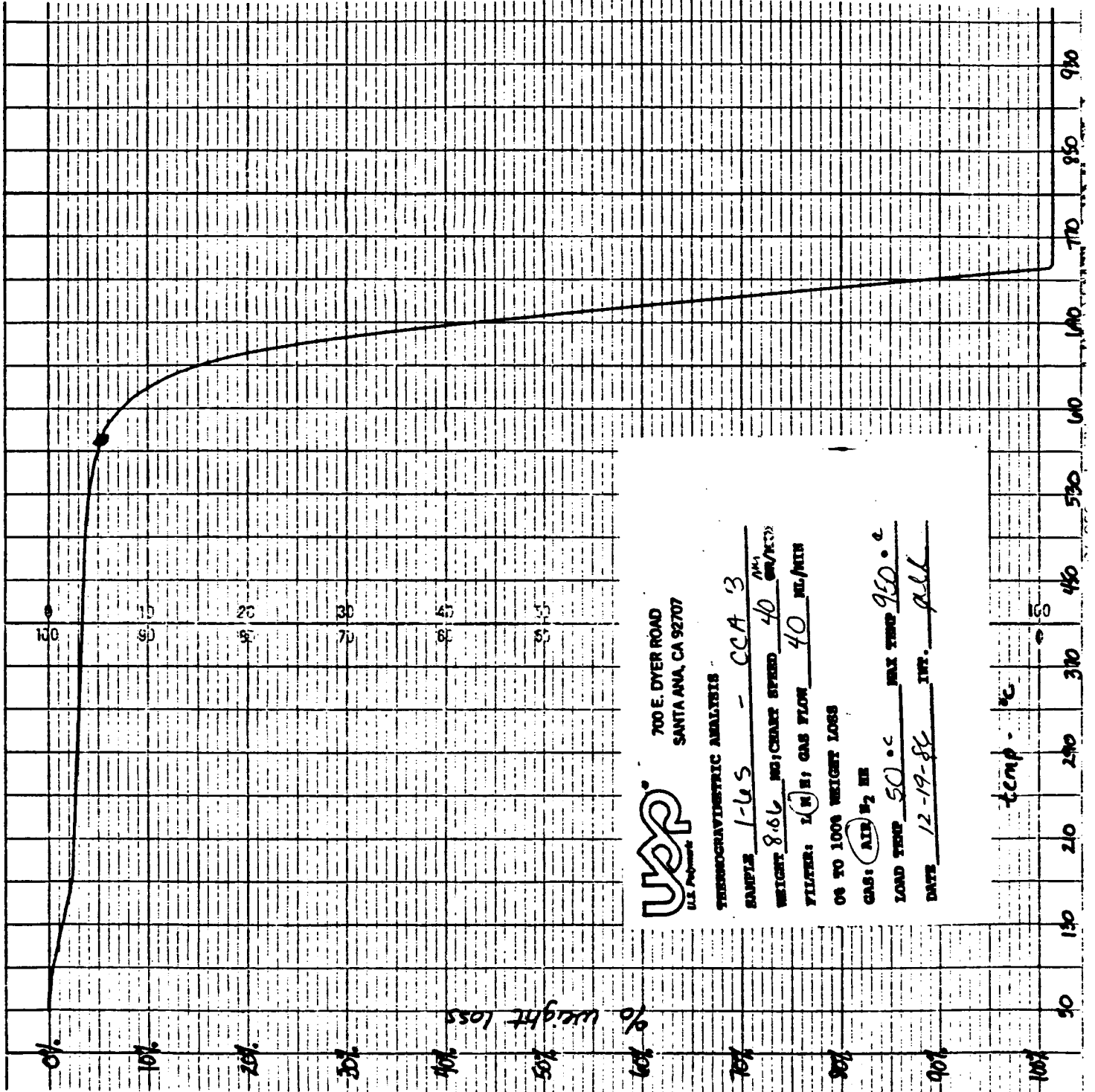




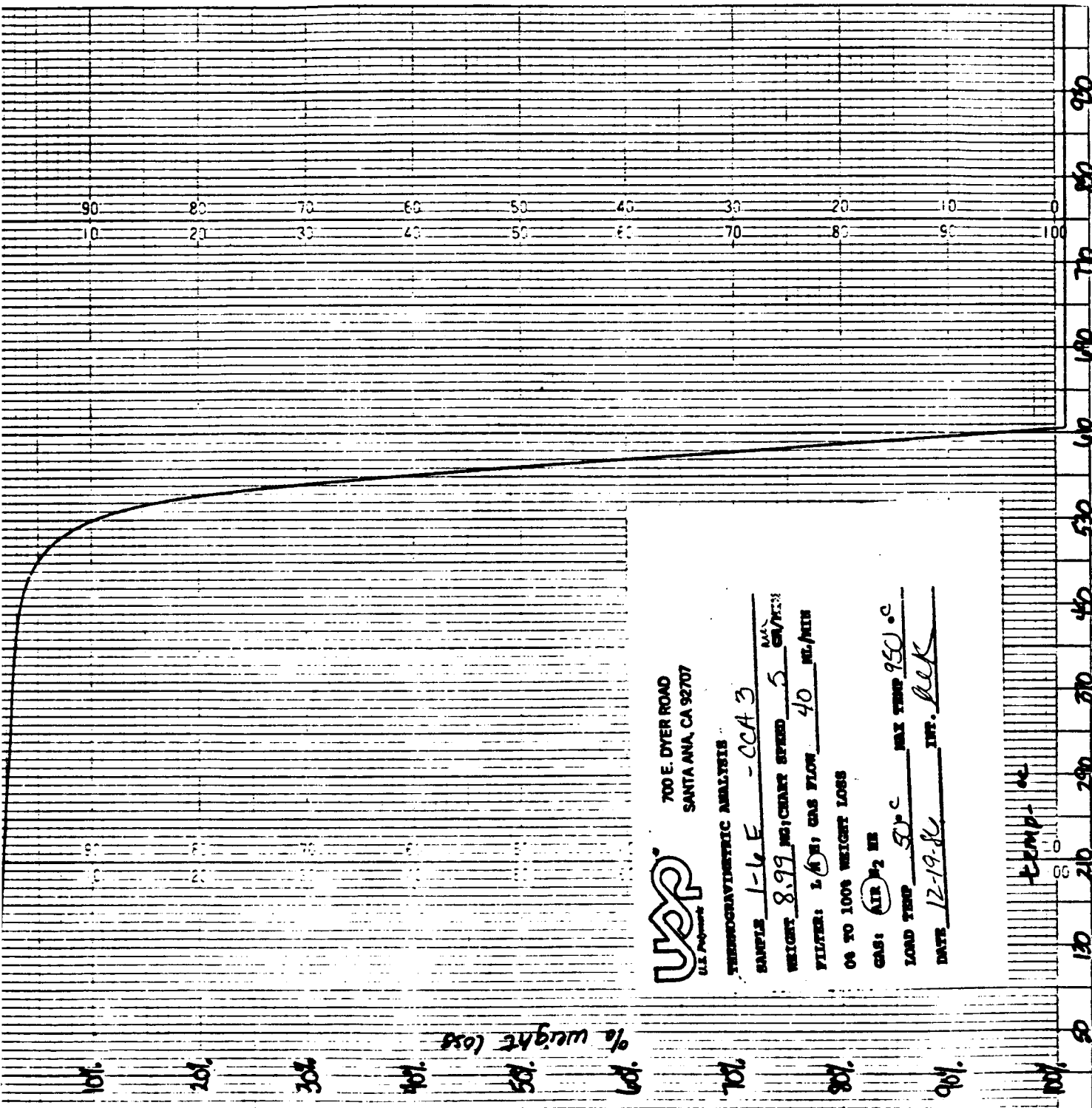
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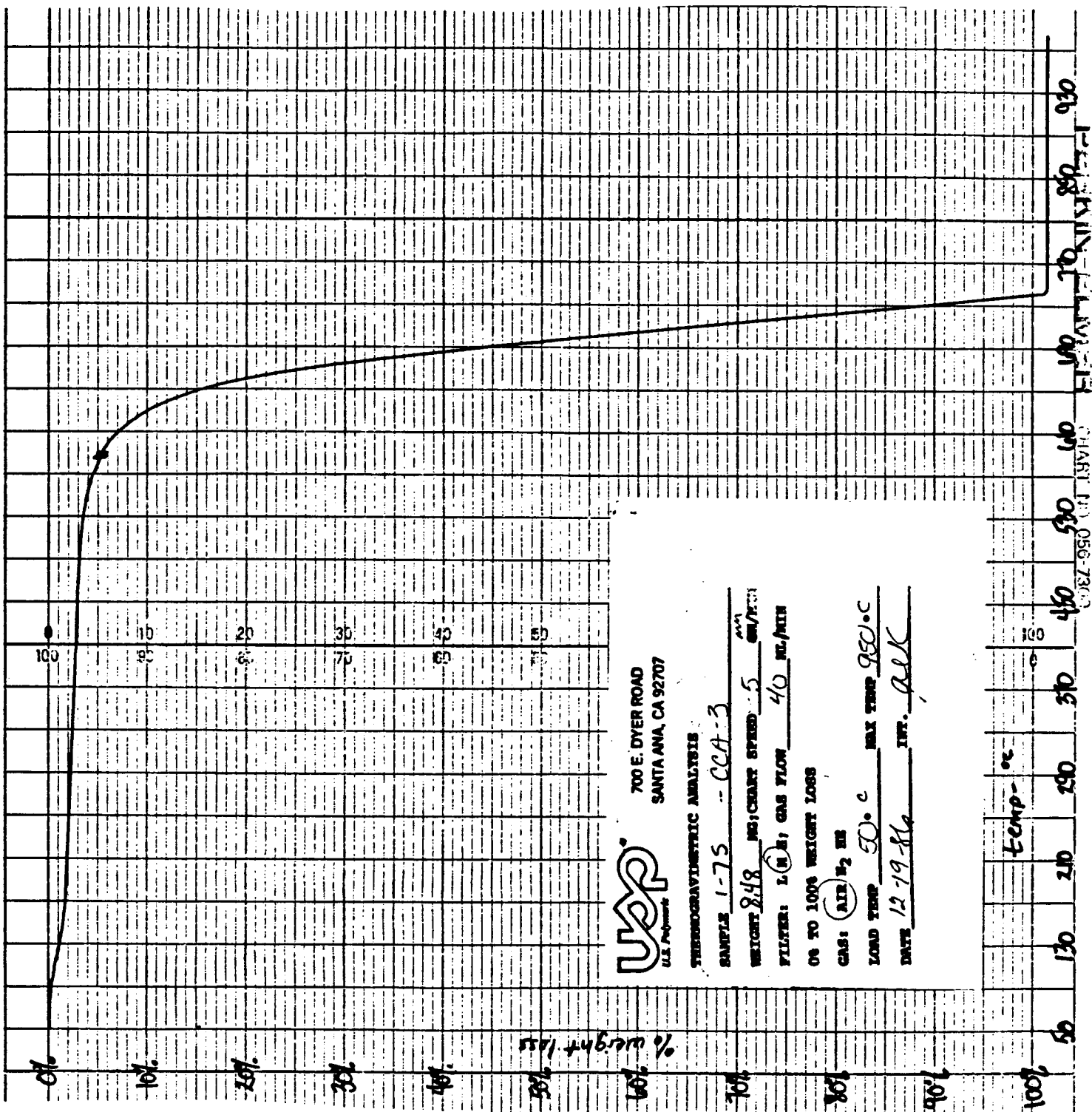
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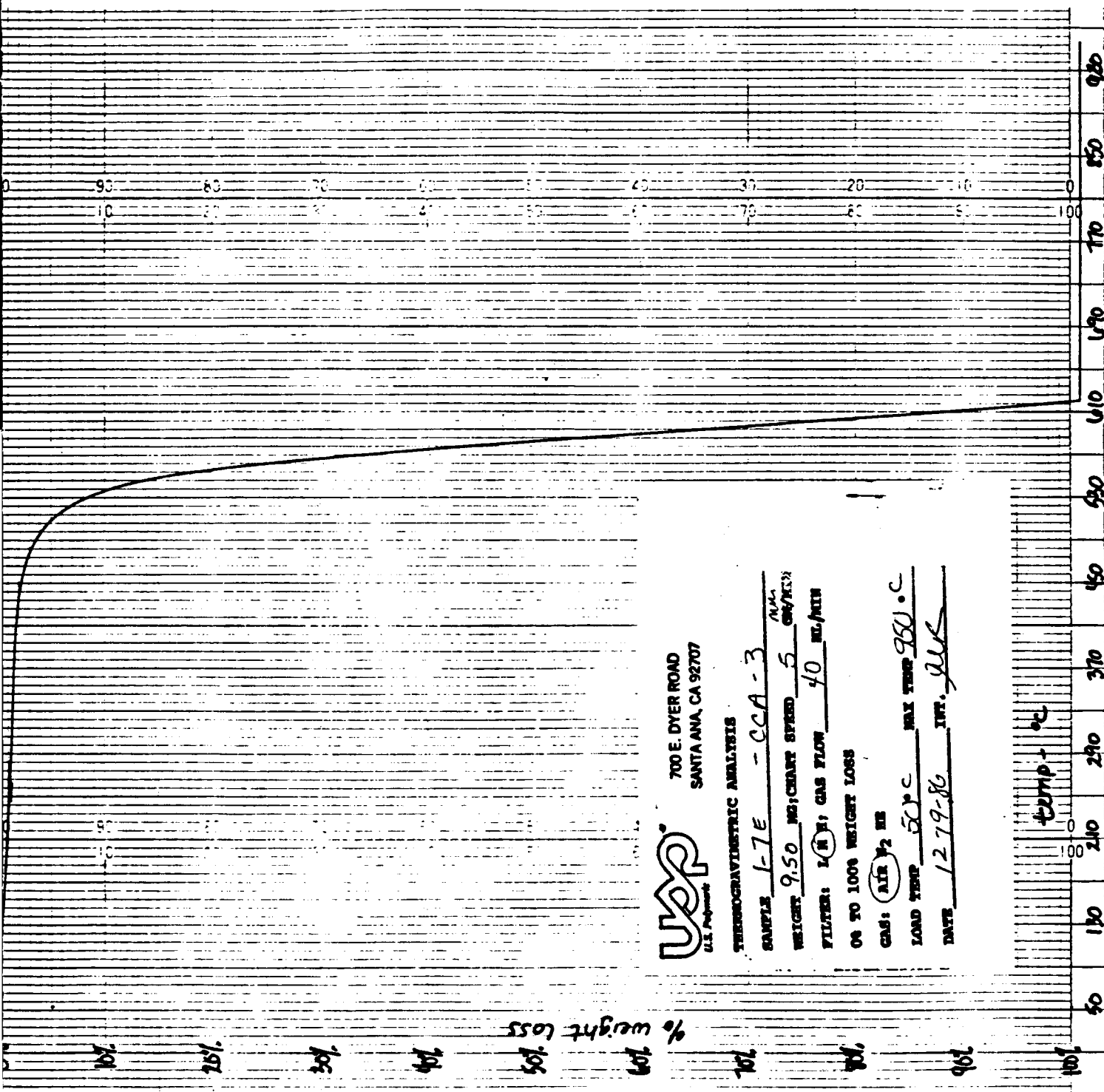
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# TABLE OF CONTENTS

## PREPREG TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

<u>TEST</u>	<u>PAGE</u>
1a. Resin Content, Soxhlet.....	1
1b. Filler Content, Soxhlet.....	2
1c. Cloth Content, Soxhlet.....	2
2. Volatile Content.....	3
3. Flow.....	3
4. Resin Content, Dry Basis.....	4
5. Tack.....	4
6. Gel Time.....	4
7a. Atomic Absorption.....	5
7b. Moisture Content.....	5
7c. Ash Content.....	5
8. TGA.....	6
9. DSC.....	6
10. Infrared (IRZB) Baseline.....	6
11. Environmental History.....	6
12. Specific Gravity.....	7
13a. Tensile Strength.....	7
13b. Tensile Modulus.....	8
13c. Tensile Elongation.....	8
14a. Flexural Strength.....	9
14b. Flexural Modulus.....	9
15a. Compressive Strength.....	10
15b. Compressive Modulus.....	11
16. Double Shear Strength.....	11
17. Barcol Hardness.....	12
18. Residual Volatiles.....	12
19. Resin Content, Pyrolysis.....	12
20. Acetone Extraction.....	13
21a. CTE, with ply.....	13
21b. CTE, crossply.....	14

## CHARTS

TGA.....	8A - 8R
DSC.....	9A - 9R
Infrared (IRZB) Baseline.....	10A - 10R
CTE .....	21A - 21R



PREPREG TESTING

NAS8-36298

U.S. POLYMERIC O.E.71108

FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

1a. Resin Content, Soxhlet, %  
CTM-6D

	ROLL#1		ROLL#1		ROLL#2		ROLL#2	
	<u>START</u>		<u>END</u>		<u>START</u>		<u>END</u>	
	33.7		34.1		34.7		36.6	
	33.5		36.9		34.4		36.1	
	<u>32.9</u>		<u>34.7</u>		<u>33.6</u>		<u>37.2</u>	
AVG.	33.4		35.7		34.2		36.6	
	ROLL#3		ROLL#3		ROLL#4		ROLL#4	
	<u>START</u>		<u>END</u>		<u>START</u>		<u>END</u>	
	34.2		36.5		36.2		35.6	
	33.5		35.7		33.6		35.8	
	<u>39.2</u>		<u>36.3</u>		<u>34.1</u>		<u>37.8</u>	
AVG.	35.6		36.2		34.6		36.4	
	ROLL#5		ROLL#5		ROLL#6		ROLL#6	
	<u>START</u>		<u>END</u>		<u>START</u>		<u>END</u>	
	34.5		33.6		34.5		34.5	
	34.9		33.6		34.8		34.8	
	<u>34.7</u>		<u>32.3</u>		<u>33.8</u>		<u>33.8</u>	
AVG.	34.7		33.2		34.4		34.4	
	ROLL#7		ROLL#7		ROLL#8		ROLL#8	
	<u>START</u>		<u>END</u>		<u>START</u>		<u>END</u>	
	33.4		36.1		33.1		34.2	
	34.2		34.8		32.1		34.6	
	<u>33.8</u>		<u>35.5</u>		<u>31.2</u>		<u>35.3</u>	
AVG.	33.8		35.5		32.1		34.7	

NASA LOT# 1 AVERAGE 34.5



FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

1b. Filler Content, Soxhlet, %  
CTM-6D

	ROLL#1 <u>START</u>	ROLL#1 <u>END</u>	ROLL#2 <u>START</u>	ROLL#2 <u>END</u>			
	14.0	15.0	14.4	15.2			
	13.9	14.1	14.3	15.0			
	<u>13.6</u>	<u>15.3</u>	<u>14.0</u>	<u>15.4</u>			
AVG.	13.8	14.8	14.2	15.2			
	ROLL#3 <u>START</u>	ROLL#3 <u>END</u>	ROLL#4 <u>START</u>	ROLL#4 <u>END</u>	ROLL#5 <u>START</u>	ROLL#5 <u>END</u>	ROLL#6 <u>START</u>
	14.2	15.1	15.0	14.8	14.3	14.0	14.3
	13.9	14.8	14.0	14.8	14.5	14.0	14.4
	<u>16.2</u>	<u>15.0</u>	<u>14.1</u>	<u>15.7</u>	<u>14.4</u>	<u>13.7</u>	<u>14.0</u>
AVG.	14.8	15.0	14.4	15.1	14.4	13.9	14.2
	ROLL#6 <u>END</u>	ROLL#7 <u>START</u>	ROLL#7 <u>END</u>	ROLL#8 <u>START</u>	ROLL#8 <u>END</u>	ROLL#9 <u>START</u>	ROLL#9 <u>END</u>
	13.8	15.0	13.5	13.7	14.2	13.6	13.5
	14.2	14.4	13.8	13.3	14.3	13.6	14.4
	<u>14.0</u>	<u>14.7</u>	<u>13.9</u>	<u>12.9</u>	<u>14.6</u>	<u>13.8</u>	<u>13.6</u>
AVG.	14.0	14.7	13.7	13.3	14.4	13.7	13.8

NASA LOT#1 AVERAGE 14.3

1c. Cloth Content, Soxhlet, %  
CTM-6D

	ROLL#1 <u>START</u>	ROLL#1 <u>END</u>	ROLL#2 <u>START</u>	ROLL#2 <u>END</u>			
	52.3	49.0	50.9	48.2			
	52.6	51.8	51.3	48.9			
	<u>53.5</u>	<u>47.8</u>	<u>52.4</u>	<u>47.4</u>			
AVG.	52.8	49.5	51.5	48.2			
	ROLL#3 <u>START</u>	ROLL#3 <u>END</u>	ROLL#4 <u>START</u>	ROLL#4 <u>END</u>	ROLL#5 <u>START</u>	ROLL#5 <u>END</u>	ROLL#6 <u>START</u>
	51.6	48.4	48.8	49.6	51.2	52.4	51.2
	52.6	49.5	52.4	49.4	50.6	52.4	50.8
	<u>44.6</u>	<u>48.7</u>	<u>51.8</u>	<u>46.5</u>	<u>50.9</u>	<u>54.0</u>	<u>52.2</u>
AVG.	49.6	48.9	51.0	48.5	50.9	52.9	51.4
	ROLL#6 <u>END</u>	ROLL#7 <u>START</u>	ROLL#7 <u>END</u>	ROLL#8 <u>START</u>	ROLL#8 <u>END</u>	ROLL#9 <u>START</u>	ROLL#9 <u>END</u>
	52.8	48.9	53.9	53.2	51.6	53.7	54.0
	51.6	50.8	52.9	54.6	51.1	53.7	50.9
	<u>52.2</u>	<u>49.8</u>	<u>52.6</u>	<u>55.9</u>	<u>50.1</u>	<u>52.8</u>	<u>53.7</u>
AVG.	52.2	49.8	53.1	54.6	50.9	53.4	52.9

NASA LOT# 1 AVERAGE 51.2

FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

2. Volatile Content, %  
PTM-17B

Volatile Content, %			ROLL#1	ROLL#1	ROLL#2	ROLL#2
PTM-17B			START	END	START	END
			4.4	4.8	4.6	4.4
			4.9	4.4	4.6	4.5
			4.6	4.8	5.0	4.8
AVG.			4.6	4.7	4.7	4.6
ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
START	END	START	END	START	END	START
4.7	4.1	3.9	4.2	4.3	3.7	3.9
4.8	4.3	4.3	4.0	4.5	3.8	4.0
5.1	4.6	4.4	4.4	4.7	4.1	4.3
AVG.	4.9	4.2	4.2	4.5	3.9	4.1
ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
END	START	END	START	END	START	END
3.6	3.9	3.7	3.7	3.7	3.7	3.8
3.9	4.2	3.9	3.6	4.0	3.9	4.0
4.0	4.3	3.9	4.0	4.1	3.9	4.2
AVG.	3.8	3.8	3.8	3.9	3.8	4.0

NASA LOT# 1 AVERAGE 4.2

3. Flow, %  
PTM-19G

Flow, %				ROLL#1	ROLL#1	ROLL#2	ROLL#2
PTM-19G				<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
				18.8	19.9	19.4	19.6
				19.5	21.1	19.4	20.9
				<u>20.2</u>	<u>19.3</u>	<u>19.8</u>	<u>19.1</u>
			AVG.	19.5	20.1	19.5	19.9
	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
	19.5	19.5	18.3	19.4	19.0	17.9	17.8
	20.6	20.2	20.2	19.9	20.0	16.2	17.8
	<u>19.8</u>	<u>19.6</u>	<u>19.2</u>	<u>18.0</u>	<u>19.0</u>	<u>17.4</u>	<u>17.9</u>
AVG.	20.0	19.8	19.2	19.1	19.3	17.2	17.8
	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	17.9	17.6	16.3	12.3	15.7	16.2	14.5
	16.0	18.5	15.8	1.19	17.5	16.2	14.9
	<u>15.6</u>	<u>18.0</u>	<u>16.7</u>	<u>11.2</u>	<u>18.2</u>	<u>16.4</u>	<u>14.9</u>
AVG.	16.5	18.0	16.3	11.8	17.1	16.3	14.8

NASA LOT# 1 AVERAGE 17.9

## FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

4. Resin Content, Dry Basis, %  
PTM-16F, Type II

Resin Content, Dry Basis, %			ROLL#1	ROLL#1	ROLL#2	ROLL#2	
PTM-16F, Type II			<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	
			32.7	34.4	37.4	35.2	
			34.8	34.3	36.6	34.7	
			<u>34.2</u>	<u>34.7</u>	<u>39.2</u>	<u>35.8</u>	
		AVG.	33.9	34.5	37.7	35.2	
	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
	36.4	34.5	35.0	33.6	35.0	32.9	35.2
	36.1	34.3	34.1	36.3	33.5	32.0	34.2
	<u>36.8</u>	<u>35.7</u>	<u>34.8</u>	<u>35.6</u>	<u>33.7</u>	<u>33.0</u>	<u>34.9</u>
AVG.	36.4	34.8	34.6	35.2	34.1	32.6	34.8
	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	33.6	34.6	33.8	32.4	33.0	33.5	32.5
	33.6	33.5	33.6	32.3	31.6	31.6	32.8
	<u>34.2</u>	<u>34.2</u>	<u>33.3</u>	<u>31.5</u>	<u>32.5</u>	<u>31.9</u>	<u>32.9</u>
AVG.	33.8	34.1	33.6	32.1	32.4	32.3	32.7

NASA LOT# 1 AVERAGE 34.2

5. TACK, lbs  
PTM-80

ROLL#1-S	45	ROLL#5-E	37
ROLL#1-E	62	ROLL#6-S	35
ROLL#2-S	48	ROLL#6-E	72
ROLL#2-E	60	ROLL#7-S	43
ROLL#3-S	45	ROLL#7-E	56
ROLL#3-E	52	ROLL#8-S	38
ROLL#4-S	55	ROLL#8-E	48
ROLL#4-E	58	ROLL#9-S	61
ROLL#5-S	<u>52</u>	ROLL#9-E	<u>36</u>
NASA LOT# 1 AVERAGE 50			

6. Gel Time, Seconds  
PTM-20E

ROLL#1-S	89	ROLL#5-E	98
ROLL#1-E	75	ROLL#6-S	109
ROLL#2-S	85	ROLL#6-E	116
ROLL#2-E	113	ROLL#7-S	96
ROLL#3-S	114	ROLL#7-E	102
ROLL#3-E	123	ROLL#8-S	98
ROLL#4-S	113	ROLL#8-E	110
ROLL#4-E	108	ROLL#9-S	119
ROLL#5-S	<u>119</u>	ROLL#9-E	<u>109</u>
NASA LOT# 1 AVERAGE 105			

FM 5055B    NASA LOT# 1    U.S.P. LOT# D09256

7a. Atomic Absorption, ppm CTM-53B		<u>ROLL#1 START</u>	<u>ROLL#1 END</u>	<u>ROLL#2 START</u>	<u>ROLL#2 END</u>	<u>ROLL#3 START</u>
Na		497	578	418	492	501
K		24	18	27	24	21
Ca		2	1	1	1	2
Mg		1	1	0	2	1
Li		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL		524	598	446	519	525

	<u>ROLL#3 END</u>	<u>ROLL#4 START</u>	<u>ROLL#4 END</u>	<u>ROLL#5 START</u>	<u>ROLL#5 END</u>	<u>ROLL#6 START</u>	<u>ROLL#6 END</u>
Na	420	311	400	315	308	283	419
K	18	22	19	20	15	27	17
Ca	2	1	0	2	2	0	2
Mg	1	1	1	2	1	0	1
Li	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL	441	335	420	339	326	310	439

	<u>ROLL#7 START</u>	<u>ROLL#7 END</u>	<u>ROLL#8 START</u>	<u>ROLL#8 END</u>	<u>ROLL#9 START</u>	<u>ROLL#9 END</u>	<u>LOT#1 AVG.</u>
Na	240	263	536	277	352	509	396
K	19	19	21	27	28	17	21
Ca	1	2	1	0	2	1	1
Mg	1	1	2	0	1	2	1
Li	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL	261	285	560	304	383	529	419

7b. Moisture Content, %  
CTM-53B

ROLL#1-S	7.10	ROLL#5-E	5.96
ROLL#1-E	6.55	ROLL#6-S	6.41
ROLL#2-S	6.31	ROLL#6-E	5.88
ROLL#2-E	6.76	ROLL#7-S	6.71
ROLL#3-S	6.70	ROLL#7-E	6.29
ROLL#3-E	6.93	ROLL#8-S	7.41
ROLL#4-S	6.86	ROLL#8-E	6.55
ROLL#4-E	6.80	ROLL#9-S	6.69
ROLL#5-S	6.56	ROLL#9-E	6.64
<u>NASA LOT# 1 AVERAGE</u>			
			6.62

7c. Ash Content, %  
CTM-53B

ROLL#1-S	.26	ROLL#5-E	.13
ROLL#1-E	.21	ROLL#6-S	.16
ROLL#2-S	.12	ROLL#6-E	.23
ROLL#2-E	.18	ROLL#7-S	.13
ROLL#3-S	.16	ROLL#7-E	.13
ROLL#3-E	.20	ROLL#8-S	.13
ROLL#4-S	.12	ROLL#8-E	.18
ROLL#4-E	.14	ROLL#9-S	.13
ROLL#5-S	.12	ROLL#9-E	.16
<u>NASA LOT# 1 AVERAGE</u>			
			.16

FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

8. TGA, % weight loss at 500°C CTM-51 (Nitrogen)	ROLL#1-S	11.3	ROLL#5-E	10.6
	ROLL#1-E	10.4	ROLL#6-S	9.8
	ROLL#2-S	10.2	ROLL#6-E	10.2
	ROLL#2-E	10.9	ROLL#7-S	9.9
	ROLL#3-S	11.0	ROLL#7-E	10.1
	ROLL#3-E	11.2	ROLL#8-S	--
	ROLL#4-S	11.0	ROLL#8-E	9.5
	ROLL#4-E	10.4	ROLL#9-S	10.2
	ROLL#5-S	10.5	ROLL#9-E	10.2
	NASA LOT# 1 AVERAGE			10.4

See chart 8A-8R

9. DSC, °C CTM-50A		<u>FIRST TEMPERATURE</u>	<u>SECOND TEMPERATURE</u>
	ROLL#1-S	177	236
	ROLL#1-E	178	237
	ROLL#2-S	179	234
	ROLL#2-E	178	238
	ROLL#3-S	179	234
	ROLL#3-E	176	236
	ROLL#4-S	177	239
	ROLL#4-E	178	238
	ROLL#5-S	177	235
	ROLL#5-E	179	238
	ROLL#6-S	177	238
	ROLL#6-E	180	236
	ROLL#7-S	178	237
	ROLL#7-E	178	239
	ROLL#8-S	178	240
	ROLL#8-E	178	241
	ROLL#9-S	178	238
	ROLL#9-E	178	237
NASA LOT# 1 AVERAGE		178	237

See chart 9A-9R

10. Infrared (IRZB) Baseline CTM-21C	ROLL#1-S	1.09	ROLL#5-E	1.10
	ROLL#1-E	1.13	ROLL#6-S	1.11
	ROLL#2-S	1.14	ROLL#6-E	1.09
	ROLL#2-E	1.15	ROLL#7-S	1.12
	ROLL#3-S	1.12	ROLL#7-E	1.10
	ROLL#3-E	1.12	ROLL#8-S	1.13
	ROLL#4-S	1.15	ROLL#8-E	1.11
	ROLL#4-E	1.11	ROLL#9-S	1.10
	ROLL#5-S	1.10	ROLL#9-E	1.13
	NASA LOT# 1 AVERAGE			1.12

See chart 10A-10R

## 11. Environmental History

Date manufactured: 13-14, May 1986  
 Packaged in: Polyethylene bag supported  
 in cardboard carton  
 Date shipped: 8, July 1986 in  
 40°F truck

## FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

12. Specific Gravity, Cured, Units  
ASTM D792

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
1.473	1.470	1.483	1.474
1.477	1.473	1.483	1.477
<u>1.464</u>	<u>1.484</u>	<u>1.461</u>	<u>1.480</u>
AVG. 1.471	1.476	1.475	1.477

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
1.481	1.470	1.475	1.435	1.475	1.473	1.481
1.474	1.467	1.475	1.451	1.460	1.466	1.481
<u>1.480</u>	<u>1.469</u>	<u>1.475</u>	<u>1.468</u>	<u>1.465</u>	<u>1.453</u>	<u>1.477</u>
AVG. 1.478	1.469	1.475	1.451	1.466	1.464	1.479

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
1.476	1.478	1.475	1.470	1.475	1.484	1.423
1.477	1.479	1.478	1.476	1.482	1.485	1.449
<u>1.473</u>	<u>1.479</u>	<u>1.476</u>	<u>1.470</u>	<u>1.482</u>	<u>1.484</u>	<u>1.471</u>
AVG. 1.475	1.478	1.476	1.472	1.480	1.484	1.448

NASA LOT# 1 AVERAGE 1.472

13a. Tensile Strength, ksi, WARP  
FTMS 406-1011

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
22.49	18.07	17.50	22.07
22.94	20.58	20.15	22.21
18.44	20.22	21.21	18.99
22.72	20.61	17.85	22.05
<u>20.62</u>	<u>18.35</u>	<u>17.77</u>	<u>21.40</u>
AVG. 21.44	19.57	18.90	21.34

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
19.93	18.64	14.58	18.51	19.75	20.24	22.97
19.89	18.86	18.29	17.17	16.98	20.74	23.09
21.09	18.62	20.60	20.84	18.82	21.28	20.62
18.79	19.12	19.02	20.76	19.55	21.19	23.93
<u>20.16</u>	<u>18.56</u>	<u>18.37</u>	<u>18.13</u>	<u>19.11</u>	<u>18.68</u>	<u>22.50</u>
AVG. 19.97	18.76	18.17	19.08	18.84	20.43	22.62

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
19.30	19.65	19.88	19.75	20.64	22.49	23.33
19.48	21.61	20.16	20.72	18.64	22.54	24.27
18.56	21.31	20.94	19.32	20.05	21.35	23.82
20.21	22.37	19.72	19.80	20.57	20.11	23.72
<u>19.31</u>	<u>23.13</u>	<u>18.08</u>	<u>21.46</u>	<u>20.88</u>	<u>22.27</u>	<u>25.24</u>
AVG. 19.37	21.61	19.76	20.21	20.16	21.75	24.08

NASA LOT# 1 AVERAGE 20.34

FM 5055B    NASA LOT# 1    U.S.P. LOT# D09256

13b. Tensile Modulus, msi, WARP  
FTMS 406-1011

			ROLL#1	ROLL#1	ROLL#2	ROLL#2
			<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
			2.43	2.71	2.67	2.78
			2.72	2.84	2.80	3.32
			2.61	2.90	2.85	3.22
			2.83	2.82	2.60	3.08
			<u>2.82</u>	<u>2.70</u>	<u>2.63</u>	<u>2.95</u>
		AVG.	2.68	2.79	2.71	3.07
	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	2.90	2.80	--	2.74	2.84	3.00
	2.92	2.93	2.95	2.64	2.61	3.09
	2.82	2.95	2.84	2.90	2.71	3.05
	2.71	3.22	2.90	3.00	2.66	3.04
	<u>2.85</u>	<u>2.80</u>	<u>2.85</u>	<u>2.84</u>	<u>2.76</u>	<u>2.82</u>
AVG.	2.84	2.94	2.89	2.82	2.72	3.00
	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
	2.94	2.92	2.86	2.90	3.08	3.01
	2.78	2.97	2.97	3.06	2.83	2.94
	2.82	3.14	3.08	3.11	3.19	2.90
	2.80	3.05	2.86	2.89	2.97	2.90
	<u>3.01</u>	<u>3.07</u>	<u>2.88</u>	<u>3.01</u>	<u>2.90</u>	<u>2.97</u>
AVG.	2.87	3.03	2.93	2.99	2.99	2.94

NASA LOT# 1    AVERAGE 2.90

13c. Tensile Elongation, %, WARP  
FTMS 406-1011

			ROLL#1	ROLL#1	ROLL#2	ROLL#2
			<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
			1.22	1.02	.89	1.25
			1.29	1.08	1.03	1.12
			1.04	1.08	1.15	.90
			1.27	1.12	.95	1.08
			<u>.98</u>	<u>.99</u>	<u>.84</u>	<u>--</u>
		AVG.	1.16	1.06	.97	1.09
	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	1.01	.98	--	1.04	1.08	1.02
	1.02	.96	.96	1.07	.96	.99
	1.12	1.00	1.05	1.13	1.02	1.10
	1.03	.86	1.00	1.07	1.07	1.06
	<u>.93</u>	<u>--</u>	<u>1.00</u>	<u>.91</u>	<u>1.02</u>	<u>1.01</u>
AVG.	1.02	.95	1.00	1.04	1.03	1.04

FM 5055B    NASA LOT# 1    U.S.P. LOT# D09256

13c. Tensile Elongation, %, WARP (CONTINUED)  
FTMS 406-1011

	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	1.12	1.08	1.08	1.00	1.06	1.16	1.24
	1.09	1.15	1.11	1.00	.95	1.02	1.24
	1.03	1.10	1.11	.96	1.07	1.04	1.24
	1.13	1.18	1.09	1.02	1.08	.90	1.27
	<u>1.00</u>	<u>1.18</u>	<u>.98</u>	<u>1.09</u>	<u>1.10</u>	<u>1.14</u>	<u>.88</u>
AVG.	1.07	1.14	1.07	1.01	1.05	1.05	1.17

NASA LOT# 1    AVERAGE 1.06

14a. Flexural Strength, ksi, WARP  
FTMS 406-1031

	ROLL#1	ROLL#1	ROLL#2	ROLL#2
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	34.12	33.89	33.45	33.89
	26.95	33.76	33.76	33.74
	33.16	34.19	31.26	33.49
	30.14	27.65	33.16	33.35
	<u>32.79</u>	<u>33.55</u>	<u>31.62</u>	<u>33.64</u>
AVG.	31.43	32.61	32.65	33.62

	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
	27.21	28.82	32.41	33.34	33.57	28.50	36.67
	30.14	27.57	32.80	37.19	28.88	31.60	34.50
	30.29	28.99	31.13	30.24	35.47	35.80	36.46
	30.06	28.91	30.45	34.55	33.08	33.40	37.10
	<u>27.24</u>	<u>29.66</u>	<u>33.49</u>	<u>35.32</u>	<u>37.87</u>	<u>34.20</u>	<u>39.48</u>
AVG.	28.99	28.79	32.06	34.13	33.77	32.70	36.84

	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	35.85	31.61	33.46	34.96	32.74	35.65	36.03
	34.90	34.68	33.30	34.45	31.30	36.12	38.49
	33.22	31.88	36.05	32.10	35.08	33.57	35.59
	33.03	35.04	34.37	33.77	36.09	37.35	39.82
	<u>33.45</u>	<u>32.65</u>	<u>37.52</u>	<u>32.92</u>	<u>35.51</u>	<u>32.06</u>	<u>36.80</u>
AVG.	34.09	33.17	34.94	33.64	34.14	34.95	37.35

NASA LOT# 1    AVERAGE 33.33

14b. Flexural Modulus, ms1, WARP  
FTMS 406-1031

	ROLL#1	ROLL#1	ROLL#2	ROLL#2
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	2.42	2.27	2.28	1.83
	2.11	2.61	2.07	2.04
	2.23	2.45	2.18	1.92
	2.56	2.11	2.19	--
	<u>2.39</u>	<u>2.15</u>	<u>2.27</u>	<u>2.03</u>
AVG.	2.34	2.32	2.20	1.96



FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

14b. Flexural Modulus, ksi, WARP (CONTINUED)  
FTMS 406-1031

	ROLL#3 <u>START</u>	ROLL#3 <u>END</u>	ROLL#4 <u>START</u>	ROLL#4 <u>END</u>	ROLL#5 <u>START</u>	ROLL#5 <u>END</u>	ROLL#6 <u>START</u>
	2.24	2.58	2.75	3.05	2.70	2.54	2.96
	2.19	2.44	2.87	2.85	2.68	2.50	2.83
	2.59	2.47	2.72	2.71	2.73	2.86	2.96
	2.35	2.44	2.51	2.77	2.78	2.67	2.96
	<u>2.03</u>	<u>2.41</u>	<u>2.85</u>	<u>2.82</u>	<u>2.69</u>	<u>2.82</u>	<u>2.84</u>
AVG.	2.28	2.47	2.74	2.84	2.72	2.68	2.91

	ROLL#6 <u>END</u>	ROLL#7 <u>START</u>	ROLL#7 <u>END</u>	ROLL#8 <u>START</u>	ROLL#8 <u>END</u>	ROLL#9 <u>START</u>	ROLL#9 <u>END</u>
	3.23	2.87	2.91	2.69	2.69	2.51	2.70
	3.33	3.35	2.89	2.73	2.72	2.75	2.70
	3.12	2.72	3.05	2.59	2.65	2.84	2.91
	3.13	2.86	3.06	2.64	2.59	2.74	2.79
	<u>3.03</u>	<u>2.80</u>	<u>2.83</u>	<u>2.67</u>	<u>2.70</u>	<u>2.58</u>	<u>2.64</u>
AVG.	3.17	2.92	2.95	2.66	2.67	2.68	2.75

NASA LOT# 1 AVERAGE 2.62

15a. Compressive Strength, ksi, WARP  
FTMS 406-1021

	ROLL#1 <u>START</u>	ROLL#1 <u>END</u>	ROLL#2 <u>START</u>	ROLL#2 <u>END</u>
	61.14	56.03	57.55	52.29
	55.21	58.32	62.68	58.44
	58.78	51.26	59.92	56.92
	56.56	52.95	58.04	59.81
	<u>56.63</u>	<u>52.64</u>	<u>56.71</u>	<u>61.47</u>
AVG.	57.66	54.24	58.98	58.39

	ROLL#3 <u>START</u>	ROLL#3 <u>END</u>	ROLL#4 <u>START</u>	ROLL#4 <u>END</u>	ROLL#5 <u>START</u>	ROLL#5 <u>END</u>	ROLL#6 <u>START</u>
	53.79	52.99	56.64	55.46	61.72	59.02	55.68
	52.23	56.08	55.90	62.89	54.74	57.02	57.70
	56.24	55.71	54.17	60.64	64.78	53.71	53.69
	57.45	60.96	51.41	56.83	57.90	61.67	55.52
	<u>57.48</u>	<u>60.64</u>	<u>55.34</u>	<u>62.14</u>	<u>64.83</u>	<u>56.04</u>	<u>57.52</u>
AVG.	55.44	57.27	54.69	59.59	60.79	57.49	56.02

	ROLL#6 <u>END</u>	ROLL#7 <u>START</u>	ROLL#7 <u>END</u>	ROLL#8 <u>START</u>	ROLL#8 <u>END</u>	ROLL#9 <u>START</u>	ROLL#9 <u>END</u>
	60.57	53.76	56.28	54.07	59.12	56.67	59.49
	59.72	58.81	54.39	51.85	55.56	60.43	57.50
	58.06	56.38	49.56	58.97	58.11	56.67	59.30
	54.90	53.97	53.77	54.97	60.60	58.13	57.81
	<u>55.89</u>	<u>58.59</u>	<u>59.48</u>	<u>54.56</u>	<u>59.53</u>	<u>53.27</u>	<u>57.14</u>
AVG.	57.83	56.30	54.70	54.88	58.58	57.03	58.25

NASA LOT# 1 AVERAGE 57.12

FM 5055B    NASA LOT# 1    U.S.P. LOT# D09256

15b. Compressive, Modulus, ksi, WARP  
FTMS 406-1021

	ROLL#1	ROLL#1	ROLL#2	ROLL#2
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	3.01	3.36	3.21	3.27
	3.29	3.27	3.31	3.83
	3.48	3.15	3.26	4.03
	3.05	3.03	3.56	3.10
	<u>3.26</u>	<u>3.28</u>	<u>3.55</u>	<u>3.64</u>
AVG.	3.22	3.22	3.38	3.57

ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
3.43	3.13	3.14	3.07	3.15	2.93	2.99
2.25	3.32	3.46	2.80	3.02	3.19	3.17
3.51	2.97	3.19	2.79	2.92	3.07	3.70
3.30	2.99	3.04	3.54	3.08	3.07	3.16
<u>4.06</u>	<u>3.34</u>	<u>3.06</u>	<u>3.16</u>	<u>3.01</u>	<u>2.94</u>	<u>3.20</u>
AVG.	3.51	3.15	3.18	3.04	3.04	3.24

ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
2.79	2.77	3.05	3.13	3.14	3.39	3.06
2.94	3.25	3.16	3.14	3.21	3.36	2.82
3.45	3.30	3.30	3.38	3.27	3.36	2.80
3.14	3.23	3.20	3.22	3.26	2.99	3.11
<u>3.02</u>	<u>3.21</u>	<u>3.23</u>	<u>3.14</u>	<u>3.35</u>	<u>3.10</u>	<u>3.02</u>
AVG.	3.07	3.15	3.19	3.25	3.24	2.96

NASA LOT# 1    AVERAGE 3.20

16. Double Shear Strength ksi  
FTMS 406-1041A

	ROLL#1	ROLL#1	ROLL#2	ROLL#2
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	4.22	4.25	3.10	4.10
	4.22	4.15	4.21	4.26
	4.35	4.27	4.06	4.88
	3.94	3.52	3.99	5.49
	<u>4.18</u>	<u>3.97</u>	<u>3.35</u>	<u>4.47</u>
AVG.	4.18	4.03	3.74	4.64

ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
4.36	4.63	5.17	4.03	3.94	3.85	4.24
4.74	4.28	4.91	4.46	3.61	4.46	4.82
4.06	4.48	4.52	4.93	3.70	3.99	5.08
4.24	3.70	3.43	5.03	4.30	5.15	4.89
<u>4.43</u>	<u>3.52</u>	<u>4.22</u>	<u>3.86</u>	<u>4.02</u>	<u>5.04</u>	<u>4.53</u>
AVG.	4.36	4.12	4.45	3.91	4.50	4.71

## FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

16. Double Shear Strength, ksi (CONTINUED)  
FTMS 406-1041A

	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	4.18	4.75	5.32	4.50	3.97	4.27	3.47
	5.00	5.49	4.75	4.38	3.35	4.43	3.90
	4.75	5.03	5.44	4.67	4.27	3.98	4.65
	4.72	4.42	4.31	3.93	4.33	4.37	4.19
	<u>5.03</u>	<u>4.70</u>	<u>4.14</u>	<u>4.72</u>	<u>4.63</u>	<u>4.25</u>	<u>3.80</u>
AVG.	4.74	4.88	4.79	4.44	4.11	4.26	4.00

NASA LOT#1 AVERAGE 4.35

17. Barcol Hardness, Units  
ASTM D-2583  
(Average of 10  
determinations)

ROLL#1-S	72.9	ROLL#5-E	74.8
ROLL#1-E	71.9	ROLL#6-S	71.0
ROLL#2-S	73.8	ROLL#6-E	74.0
ROLL#2-E	73.9	ROLL#7-S	72.5
ROLL#3-S	74.6	ROLL#7-E	73.6
ROLL#3-E	72.9	ROLL#8-S	71.5
ROLL#4-S	73.6	ROLL#8-E	71.3
ROLL#4-E	73.3	ROLL#9-S	73.1
<u>ROLL#5-S</u>	<u>73.0</u>	<u>ROLL#9-E</u>	<u>71.9</u>

NASA LOT# 1 AVERAGE 73.0

18. Residual Volatiles, %  
PTM-98

	ROLL#1	ROLL#1	ROLL#2	ROLL#2
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	1.67	1.51	1.79	2.20
	1.65	1.53	1.74	2.20
	<u>1.68</u>	<u>1.55</u>	<u>1.75</u>	<u>2.18</u>
AVG.	1.67	1.53	1.76	2.20

	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	1.67	1.90	1.79	1.92	1.87	2.03	1.96
	1.69	1.84	1.77	1.91	1.85	2.01	1.99
	<u>1.66</u>	<u>1.87</u>	<u>1.78</u>	<u>1.91</u>	<u>1.83</u>	<u>1.97</u>	<u>2.04</u>
AVG.	1.67	1.87	1.78	1.91	1.85	2.00	2.00

	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	1.92	2.18	2.17	1.83	1.68	1.57	1.78
	1.93	2.07	2.17	1.79	1.75	1.50	1.73
	<u>1.91</u>	<u>2.13</u>	<u>2.19</u>	<u>1.76</u>	<u>1.74</u>	<u>1.55</u>	<u>1.71</u>
AVG.	1.92	2.13	2.18	1.79	1.72	1.54	1.74

NASA LOT#1 AVERAGE 1.85

19. Resin Content, Pyrolysis, %  
CTM-14B

	ROLL#1	ROLL#1	ROLL#2	ROLL#2
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	34.57	34.12	33.37	34.67
	35.33	35.51	33.58	34.41
	<u>34.97</u>	<u>31.95</u>	<u>33.98</u>	<u>34.66</u>
AVG.	34.95	33.86	33.64	34.58

FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

19. Resin Content, Pyrolysis, % (CONTINUED)  
CTM-14B

	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	33.62	33.92	36.63	34.87	34.92	33.57	33.74
	33.53	35.59	35.91	34.86	35.02	33.51	33.14
	<u>33.95</u>	<u>33.72</u>	<u>36.05</u>	<u>35.91</u>	<u>34.89</u>	<u>33.49</u>	<u>33.94</u>
AVG.	33.70	34.41	36.20	35.22	34.94	33.52	33.61
	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	33.33	34.97	32.87	33.12	33.82	33.91	36.42
	33.57	35.33	32.98	34.42	34.37	33.98	36.24
	<u>34.04</u>	<u>34.83</u>	<u>32.09</u>	<u>33.92</u>	<u>31.86</u>	<u>35.31</u>	<u>36.25</u>
AVG.	33.65	35.04	32.65	33.82	33.35	34.40	36.30

NASA LOT# 1 AVERAGE 34.32

20. Acetone Extraction, %  
CTM-18A

			ROLL#1	ROLL#1	ROLL#2	ROLL#2
			<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
			2.35	1.64	2.15	3.03
			2.14	2.36	2.16	2.35
			<u>2.20</u>	<u>2.39</u>	<u>2.93</u>	<u>2.61</u>
		AVG.	2.23	2.13	2.41	2.66
	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#6
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
	2.23	1.74	1.69	1.35	2.87	2.48
	1.46	2.01	1.90	1.69	1.98	2.05
	<u>3.22</u>	<u>2.16</u>	<u>2.82</u>	<u>2.71</u>	<u>2.15</u>	<u>1.63</u>
AVG.	2.30	1.97	2.14	1.92	2.33	2.05
	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
	1.26	2.27	1.71	2.16	1.94	1.92
	1.85	1.96	1.68	1.67	1.97	1.84
	<u>2.47</u>	<u>2.11</u>	<u>1.28</u>	<u>1.58</u>	<u>2.06</u>	<u>1.58</u>
AVG.	1.86	2.11	1.56	1.81	1.99	1.78

NASA LOT # 1 AVERAGE 2.02

21a. CTE, in/in °F, with PLY  
PTM-61B

			ROLL#1	ROLL#1	ROLL#2	ROLL#2
			<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
			2.68	3.73	4.07	2.87
			<u>3.58</u>	<u>4.61</u>	<u>3.39</u>	<u>4.04</u>
		AVG.	3.13	4.17	3.73	3.46
	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#6
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>
	4.10	4.36	3.16	2.98	3.99	5.45
	<u>2.72</u>	<u>3.35</u>	<u>4.36</u>	<u>3.65</u>	<u>3.47</u>	<u>4.69</u>
AVG.	3.41	3.86	3.76	3.32	3.73	5.07

FM 5055B NASA LOT# 1 U.S.P. LOT# D09256

21a. CTE, 1n/1n °F, with PLY (CONTINUED)  
PTM-61B

	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	4.63	4.43	4.88	4.92	4.32	4.36	3.84
	<u>3.99</u>	<u>4.39</u>	<u>4.39</u>	<u>4.55</u>	<u>5.22</u>	<u>4.67</u>	<u>3.70</u>
AVG.	4.31	4.41	4.64	4.74	4.77	4.52	3.77

NASA LOT#1 AVERAGE 3.98

21b. CTE, 1n/1n °F, Crossply  
PTM-61B

	ROLL#1	ROLL#1	ROLL#2	ROLL#2
	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	9.35	9.01	6.01	7.01
	<u>4.43</u>	<u>6.19</u>	<u>4.75</u>	<u>9.28</u>
AVG.	6.89	7.60	5.38	8.15

	ROLL#3	ROLL#3	ROLL#4	ROLL#4	ROLL#5	ROLL#5	ROLL#6
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	5.87	8.29	6.86	5.75	10.13	8.17	5.57
	<u>5.70</u>	<u>9.09</u>	<u>4.61</u>	<u>8.88</u>	<u>6.18</u>	<u>5.88</u>	<u>9.66</u>
AVG.	5.79	8.69	5.74	7.32	8.16	7.03	7.62

	ROLL#6	ROLL#7	ROLL#7	ROLL#8	ROLL#8	ROLL#9	ROLL#9
	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>	<u>START</u>	<u>END</u>
	9.01	5.49	7.22	10.67	9.40	7.12	7.25
	<u>8.05</u>	<u>6.24</u>	<u>6.71</u>	<u>8.48</u>	<u>7.99</u>	<u>6.65</u>	<u>7.66</u>
AVG.	8.53	5.87	6.97	9.58	8.70	6.89	7.46

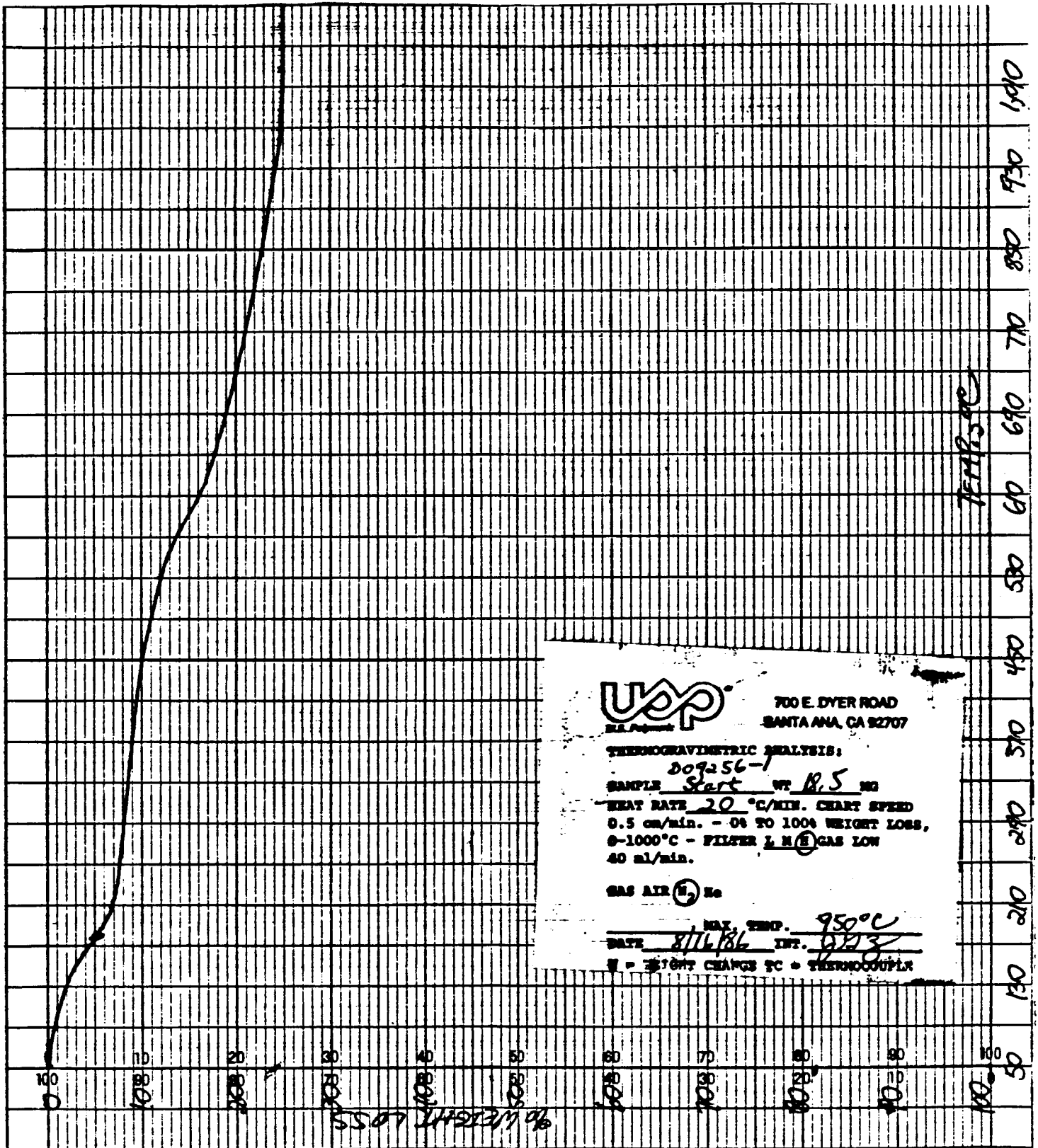
NASA LOT# 1 AVERAGE 7.35

See chart 21A-21R

U.S. Polymeric

*Hamid M. Guraishi*  
 Hamid M. Guraishi, Manager  
 Quality Assurance Department

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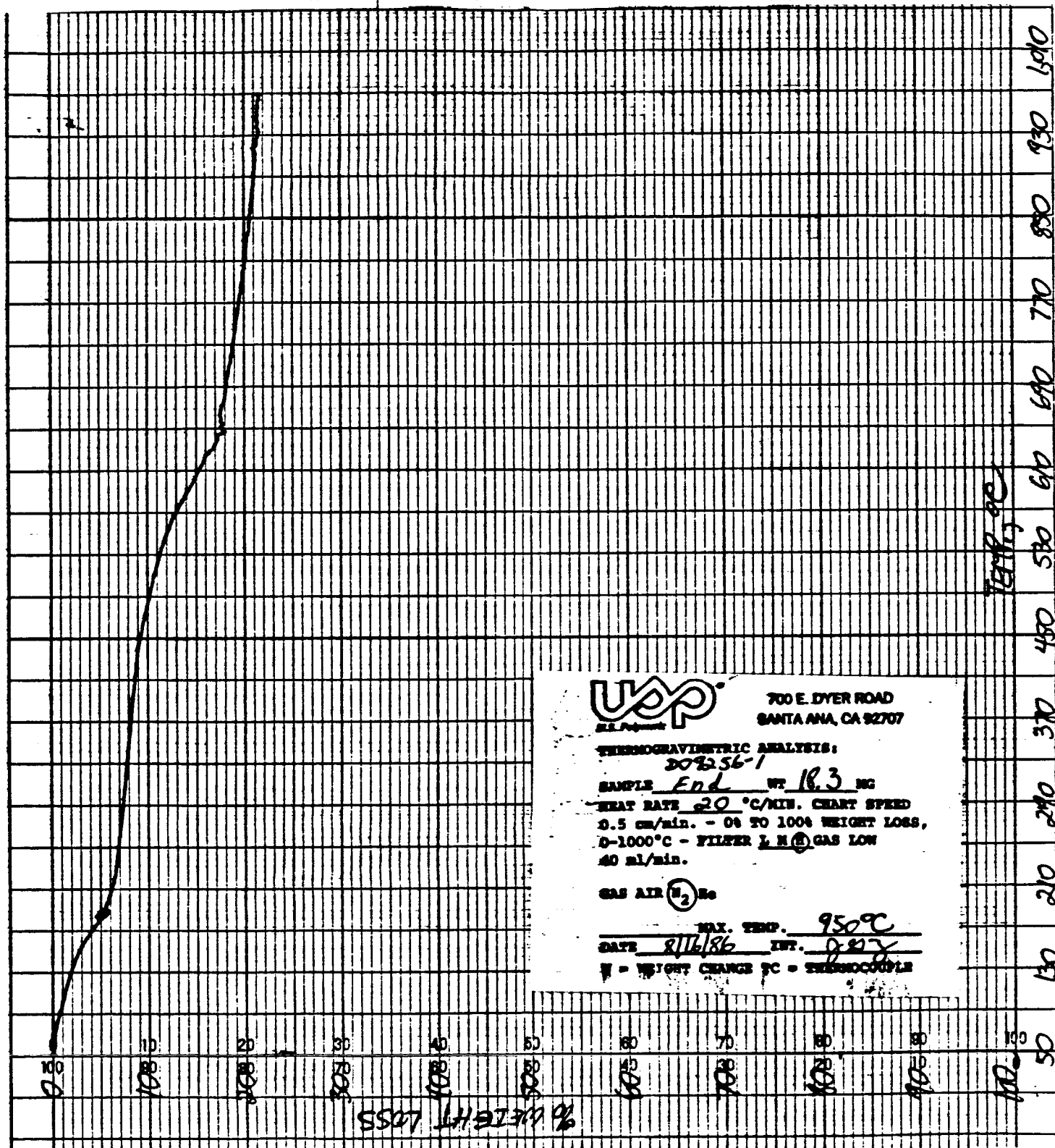
**THERMOGRAVIMETRIC ANALYSIS:**

SAMPLE 809256-1  
HEAT RATE 20 °C/MIN. CHART SPEED  
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,  
0-1000°C - FILTER L.H. GAS LOW  
40 ml/min.

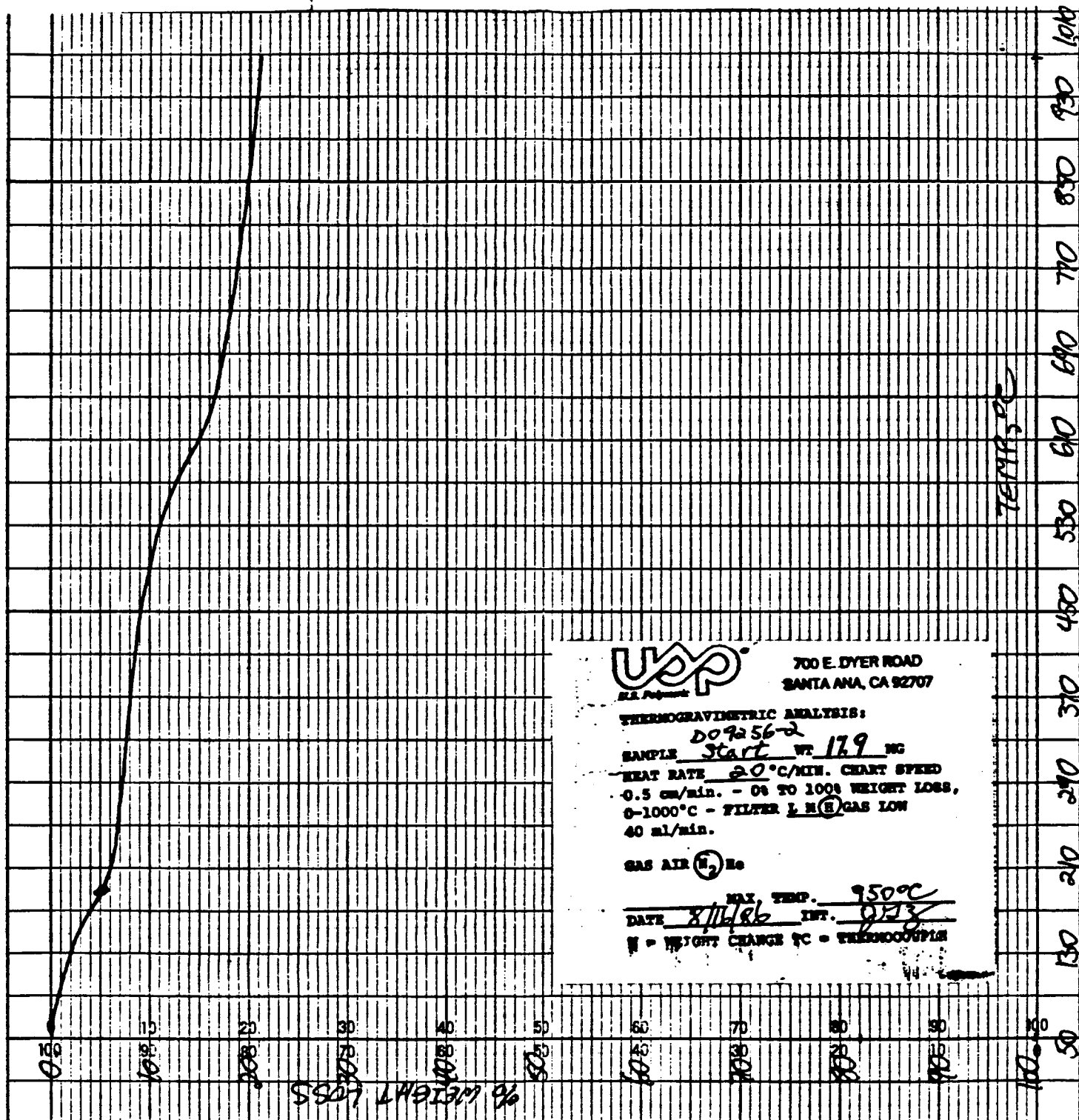
GAS AIR (H<sub>2</sub>) No

MAX. TEMP. 950°C  
DATE 8/16/86 INT. 0723  
W = WEIGHT CHANGES TC = THERMOCOUPLE

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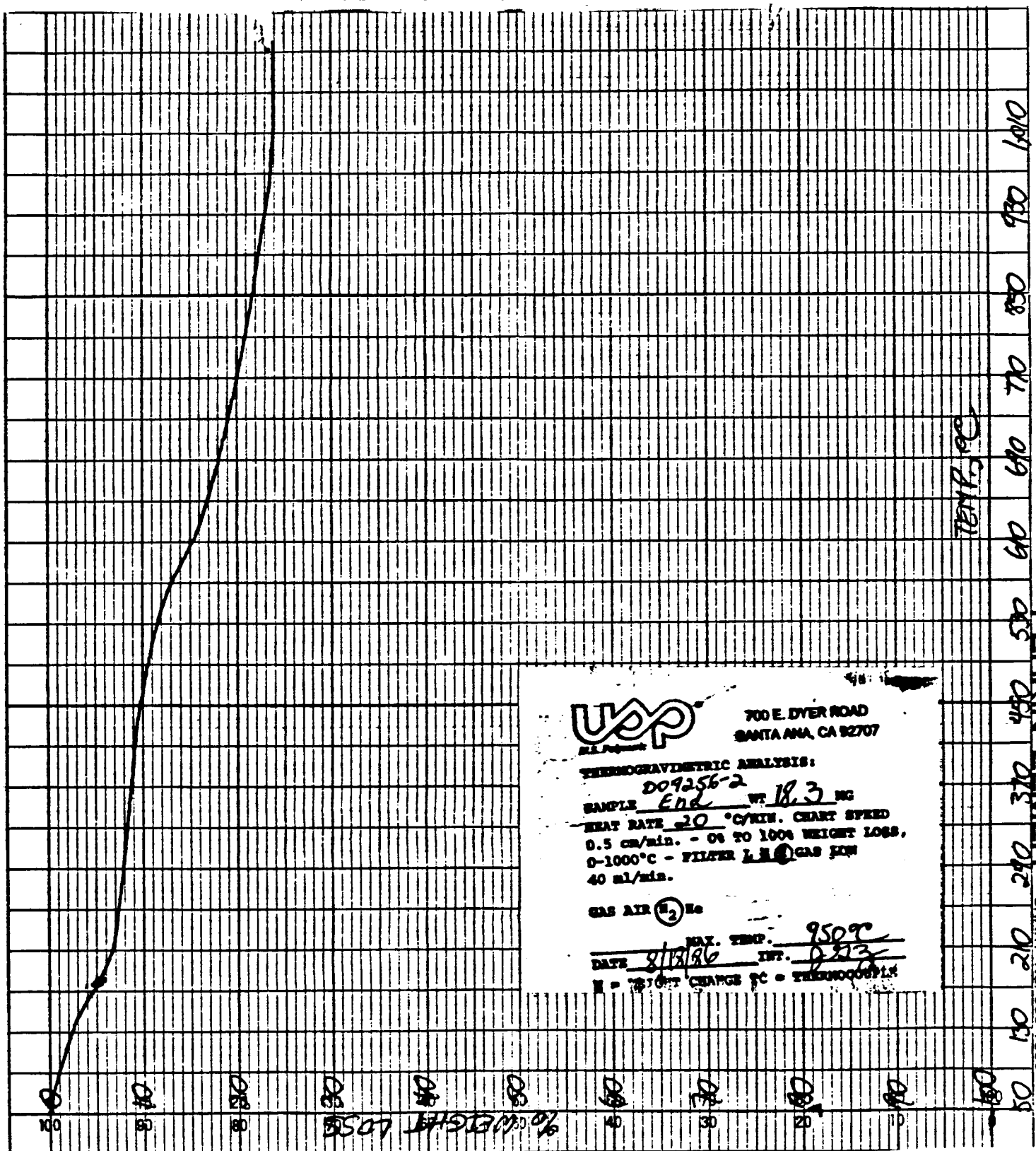


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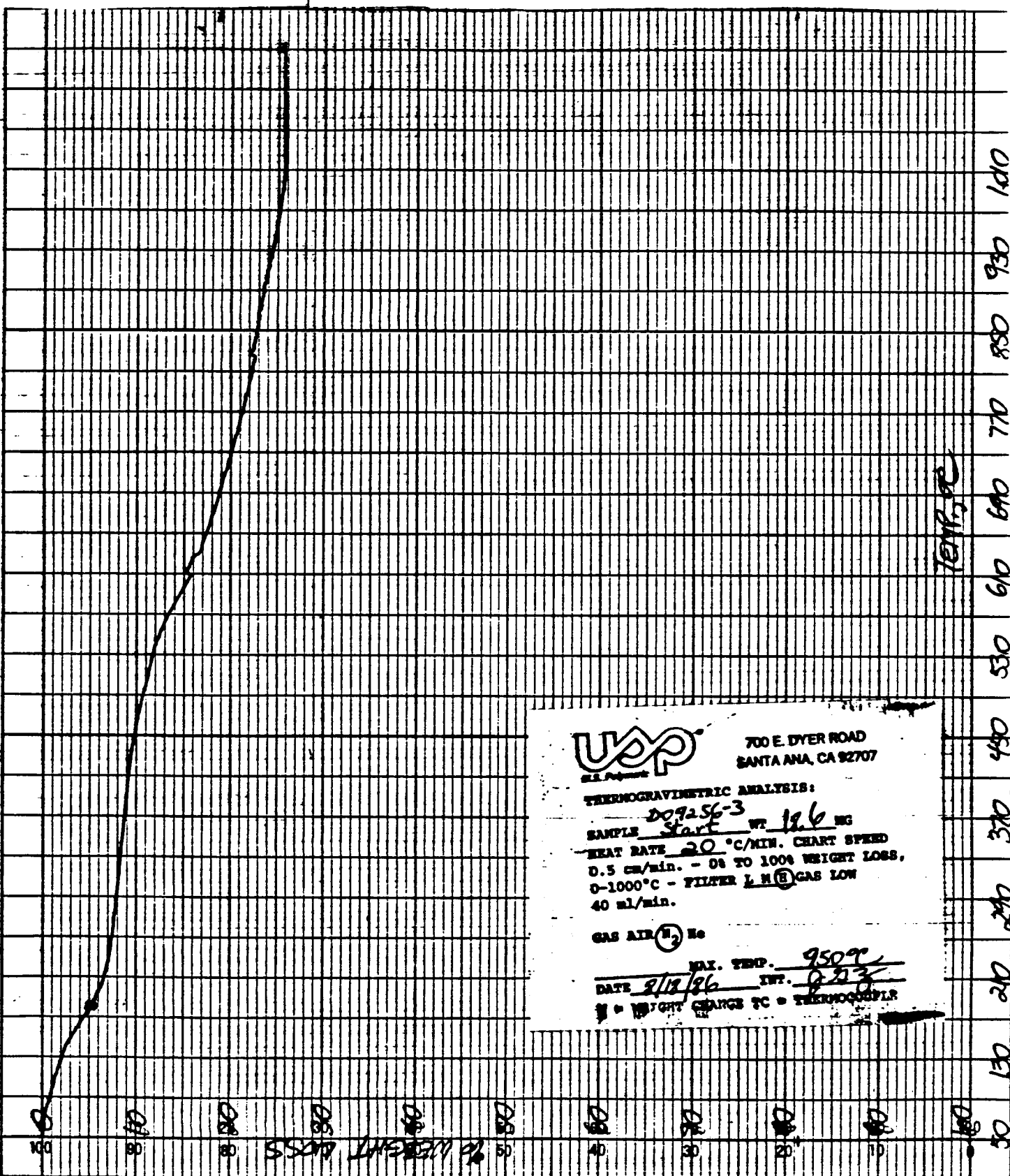




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U.S. Patent

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**THERMOGRAVIMETRIC ANALYSIS:**

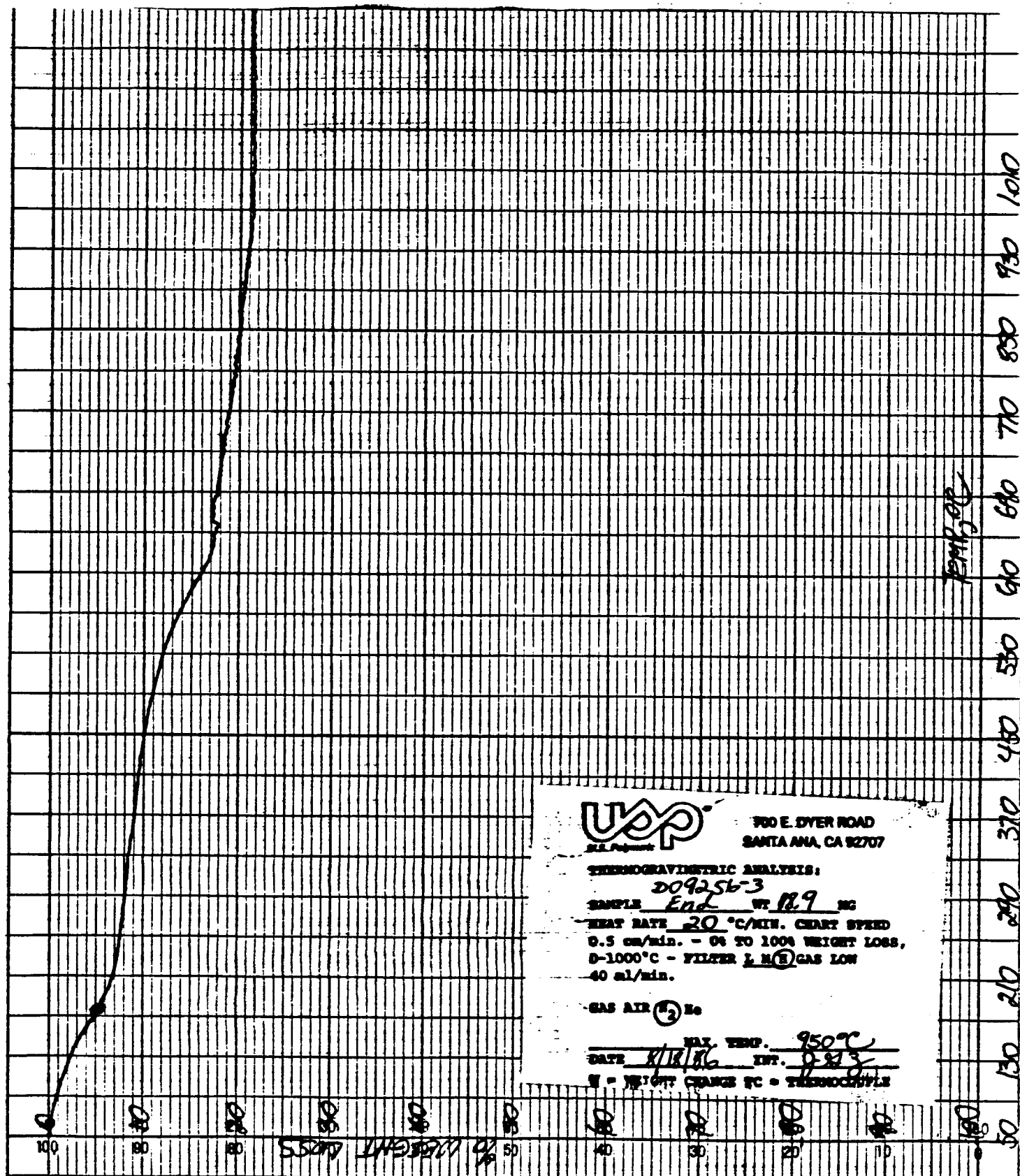
SAMPLE 209256-3 WT. 12.6 MG

HEAT RATE 20 °C/MIN. CHART SPEED  
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,  
0-1000°C - FILTER L H (H) GAS LOW  
40 ml/min.

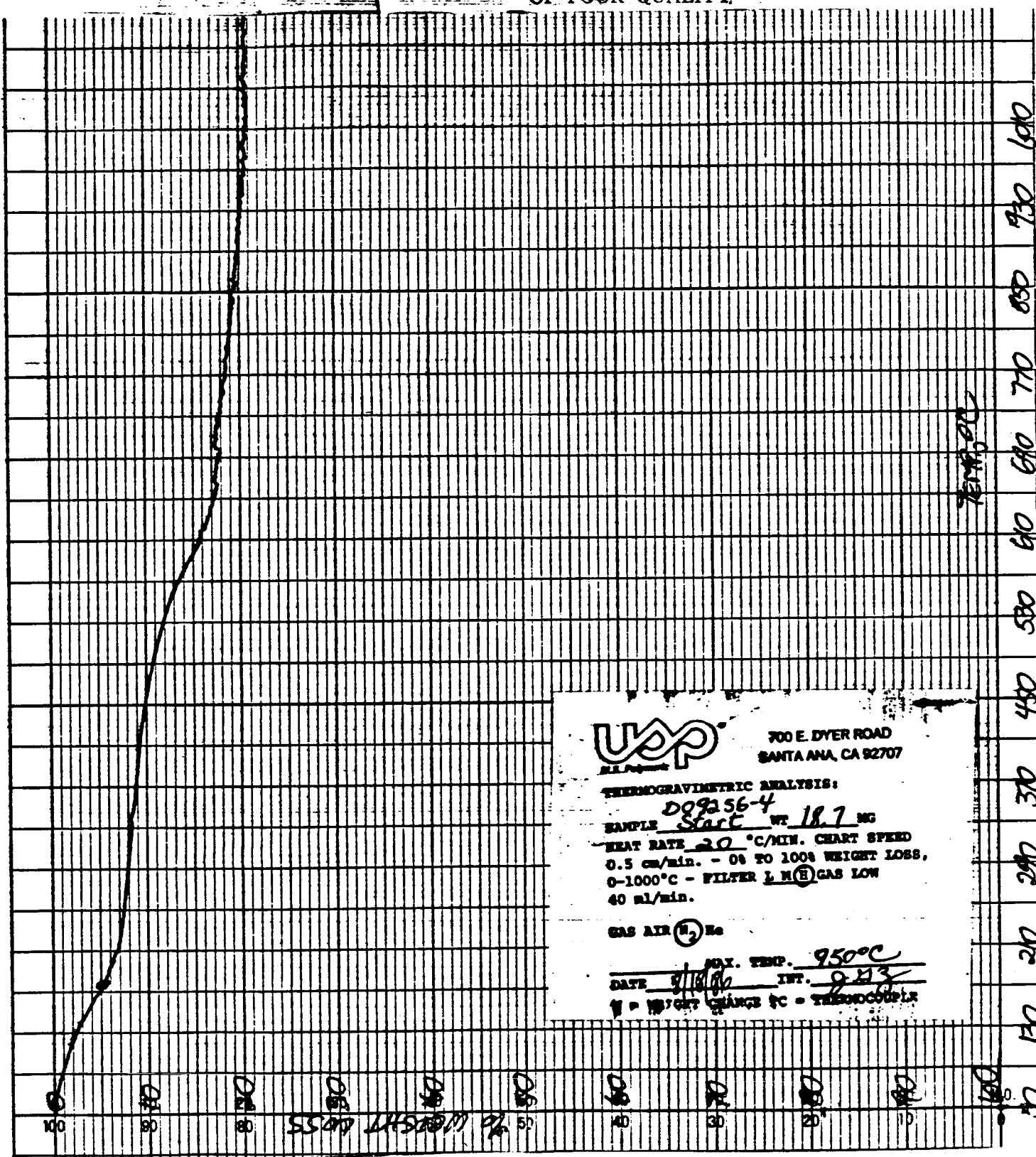
GAS AIR (H) N<sub>2</sub>

MAX. TEMP. 950°C  
DATE 8/12/86 INT. 0.25  
W = WEIGHT CHANGE TC = THERMOCOUPLE

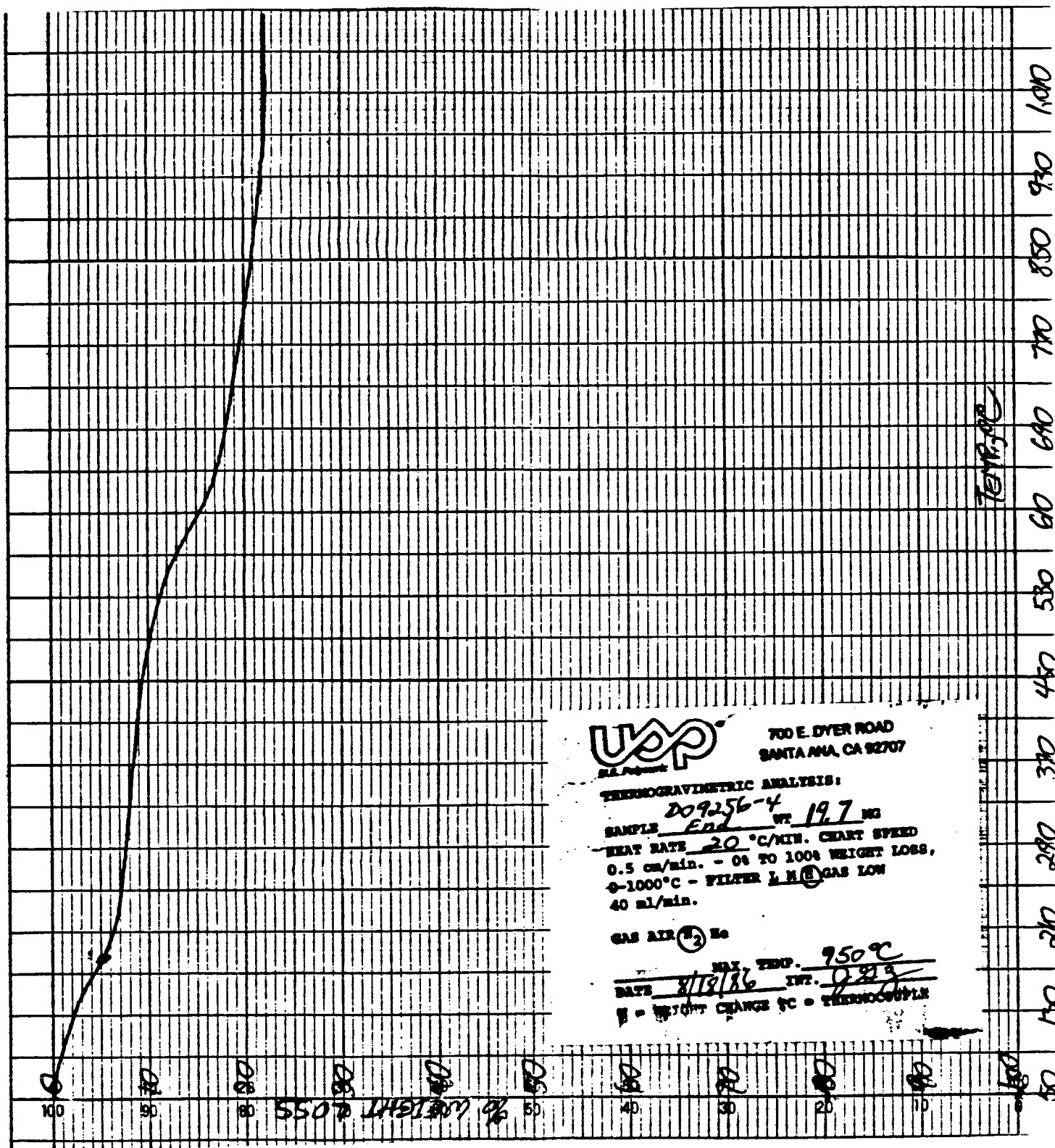
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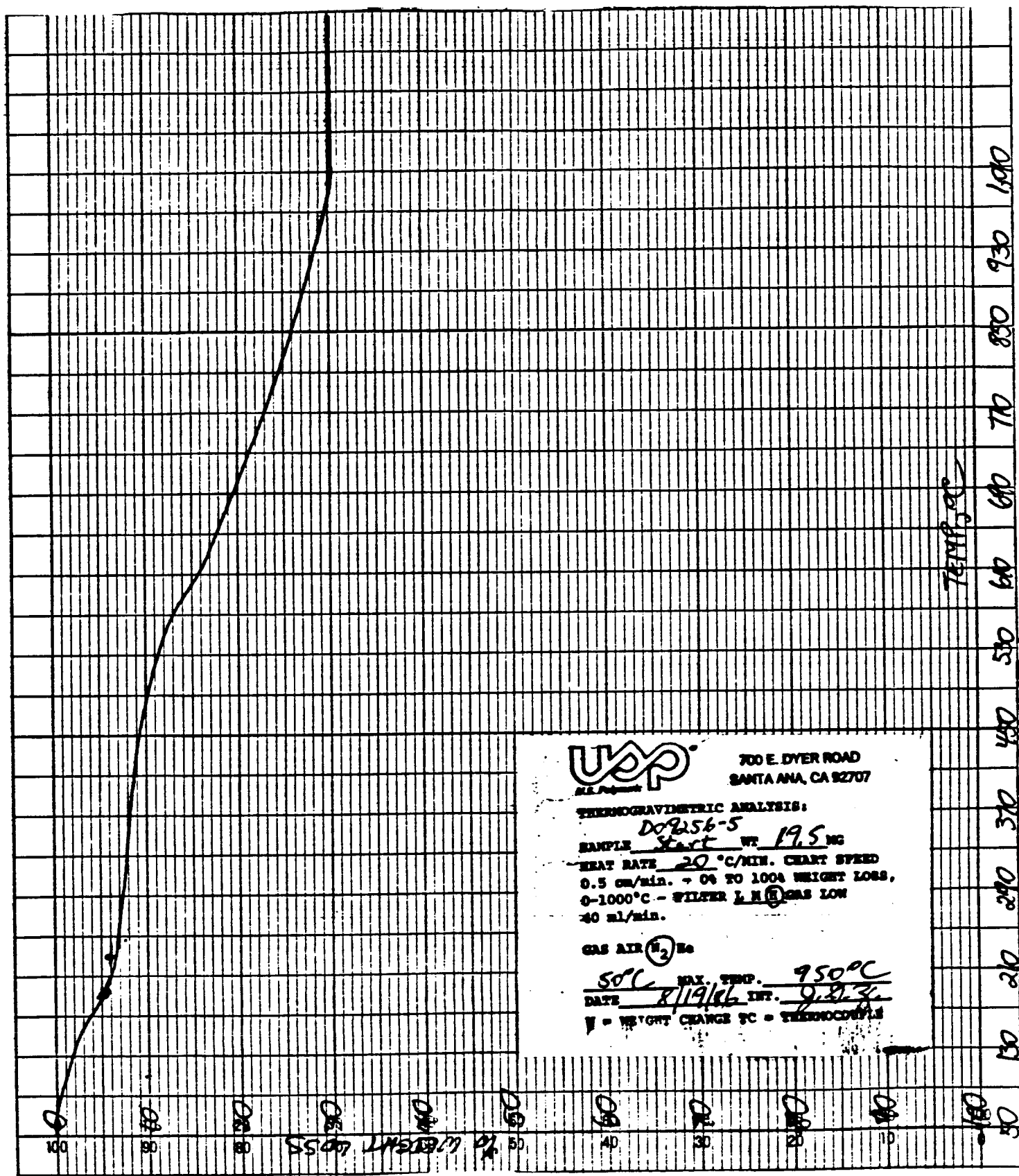
THERMogrAVIMETRIC ANALYSIS:

SAMPLE D09256-4 WT. 19.7 MG  
HEAT RATE 20 °C/MIN. CHART SPEED  
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,  
0-1000°C - FILTER L.H. GAS LOW  
40 ml/min.

GAS AIR (2) He

MAX. TEMP. 950 °C  
DATE 8/18/86 INT. 0.813  
% = WEIGHT CHANGE °C = THERMOCOUPLE

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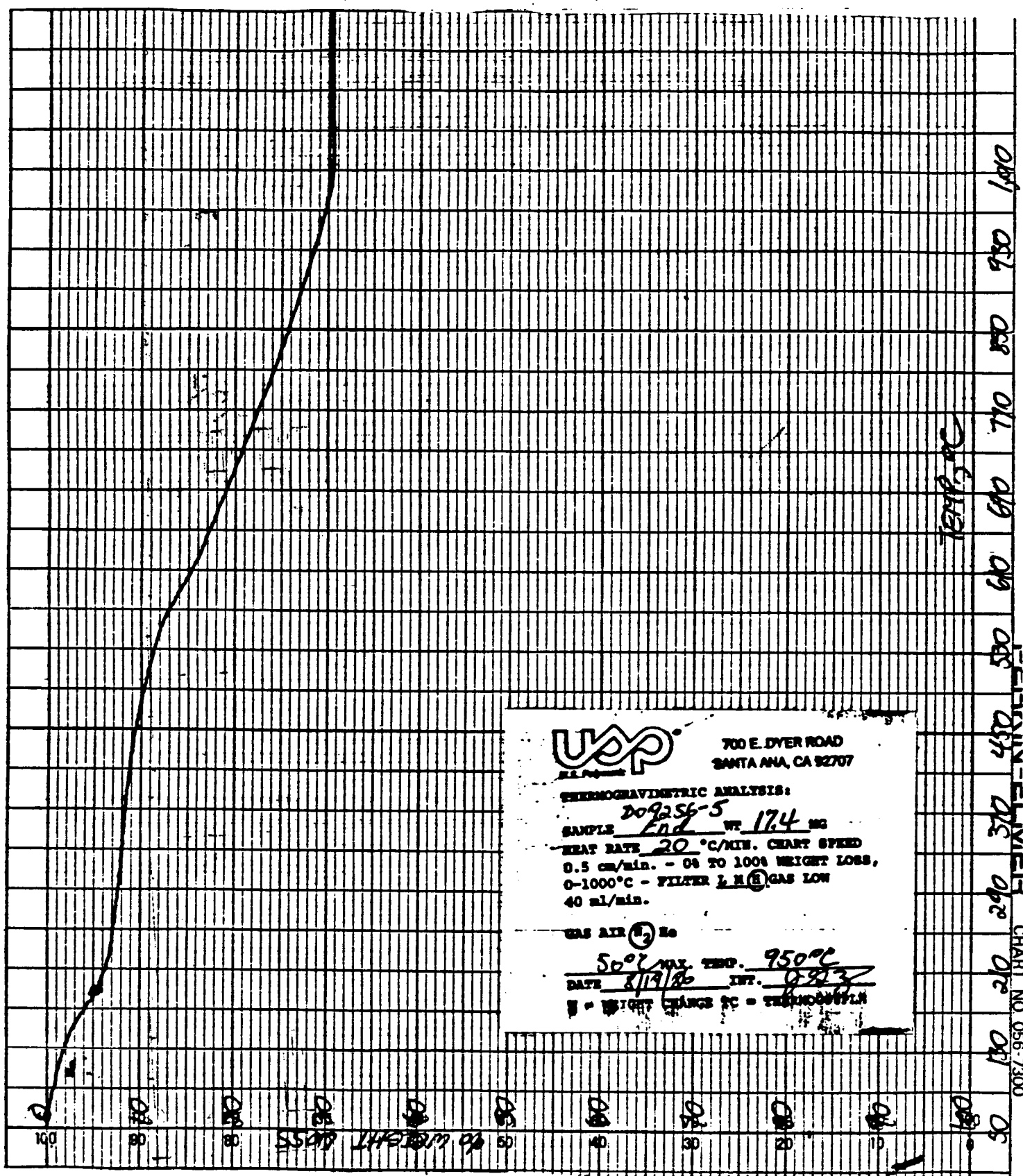
THERMogrAVIMETRIC ANALYSIS:

SAMPLE D09256-5 WT 19.5 MG  
HEAT RATE 20 °C/MIN. CHART SPEED  
0.5 cm/min. → 0% TO 100% WEIGHT LOSS,  
0-1000°C - WILFLEX L.H. (H) GAS LOW  
40 ml/min.

GAS AIR (N<sub>2</sub>) He

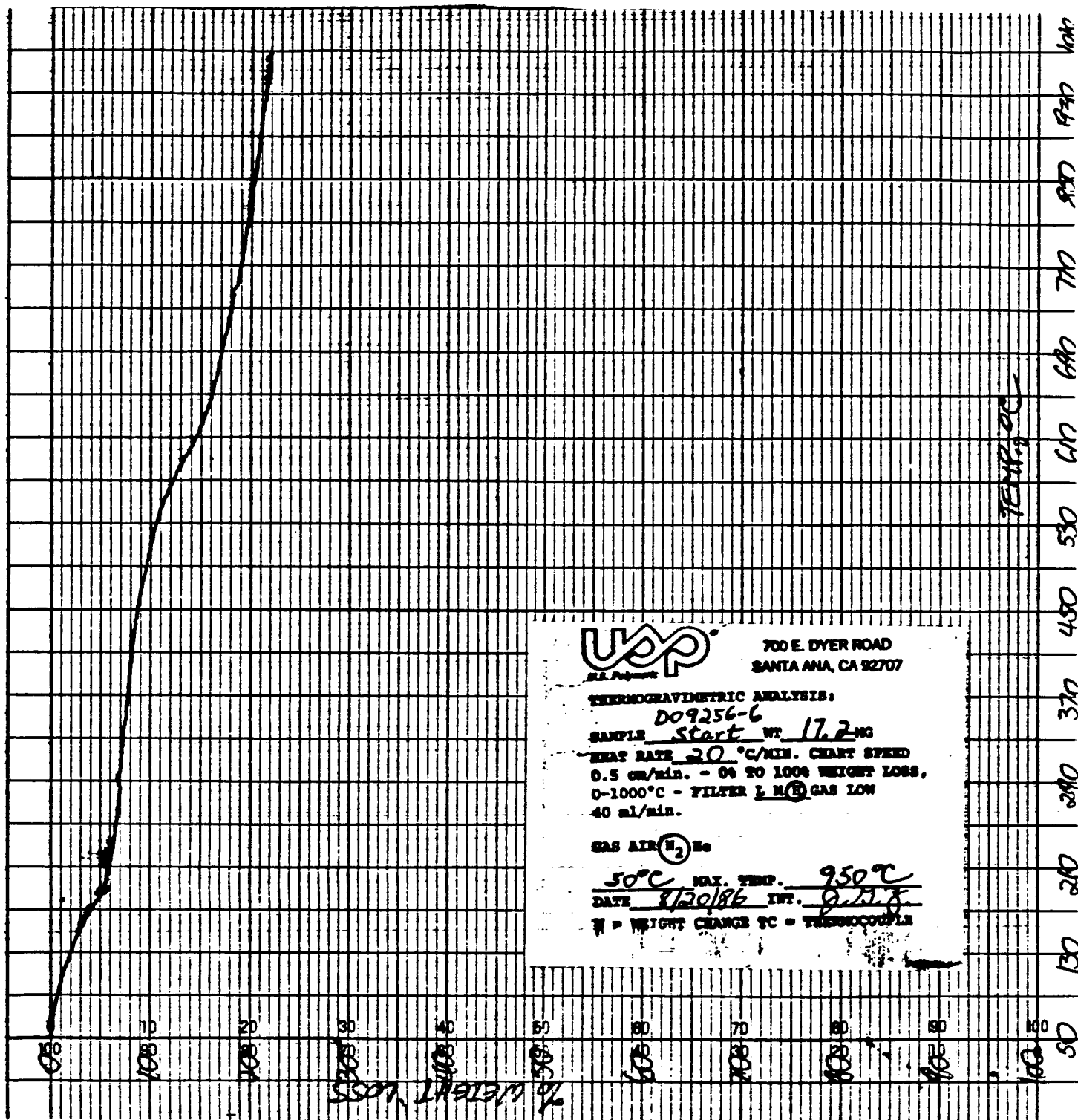
50°C MAX. TEMP. 950°C  
DATE 8/19/66 INT. 9.2.3  
W = WEIGHT CHANGE TC = THERMOCOUPLE

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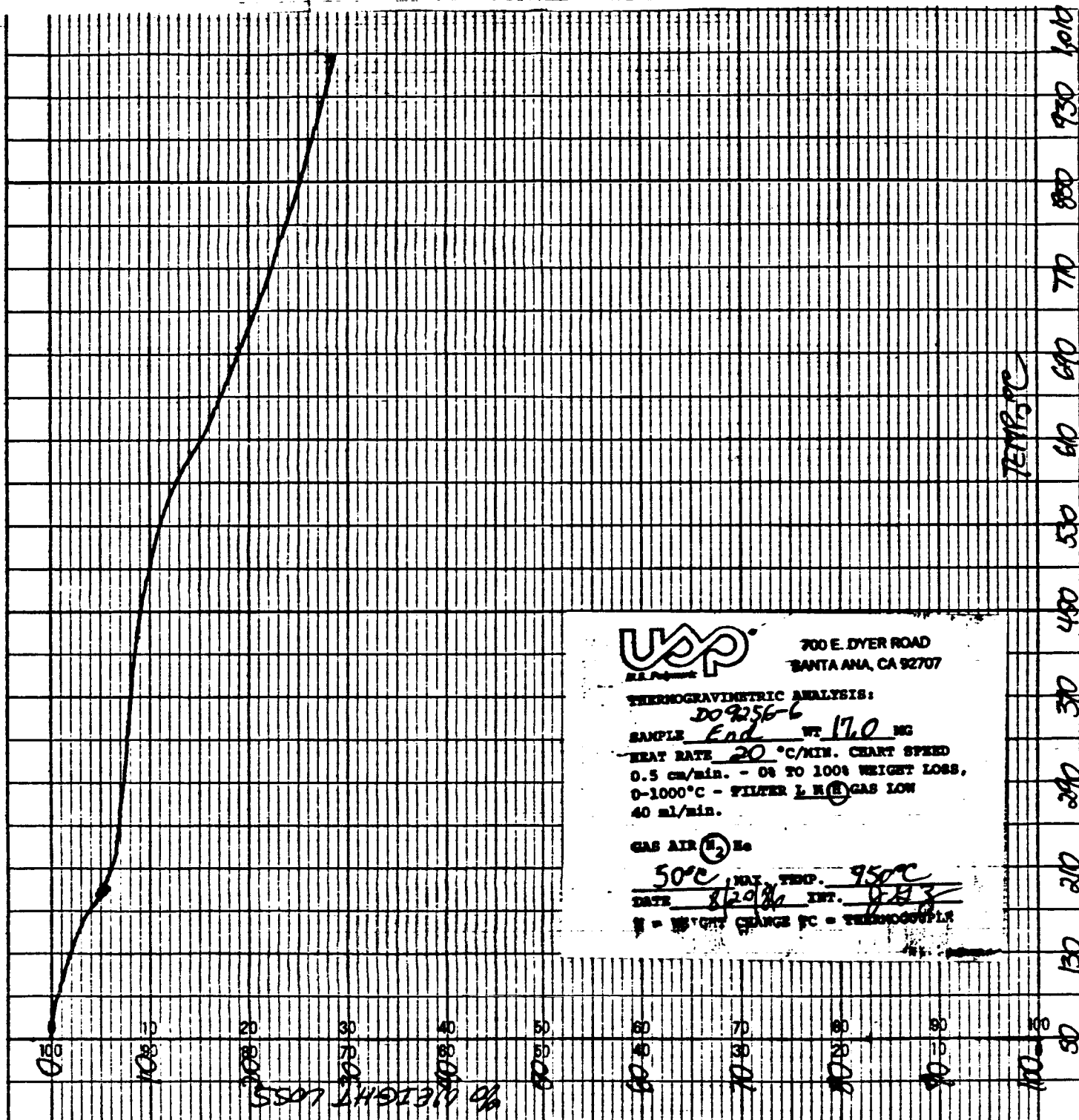


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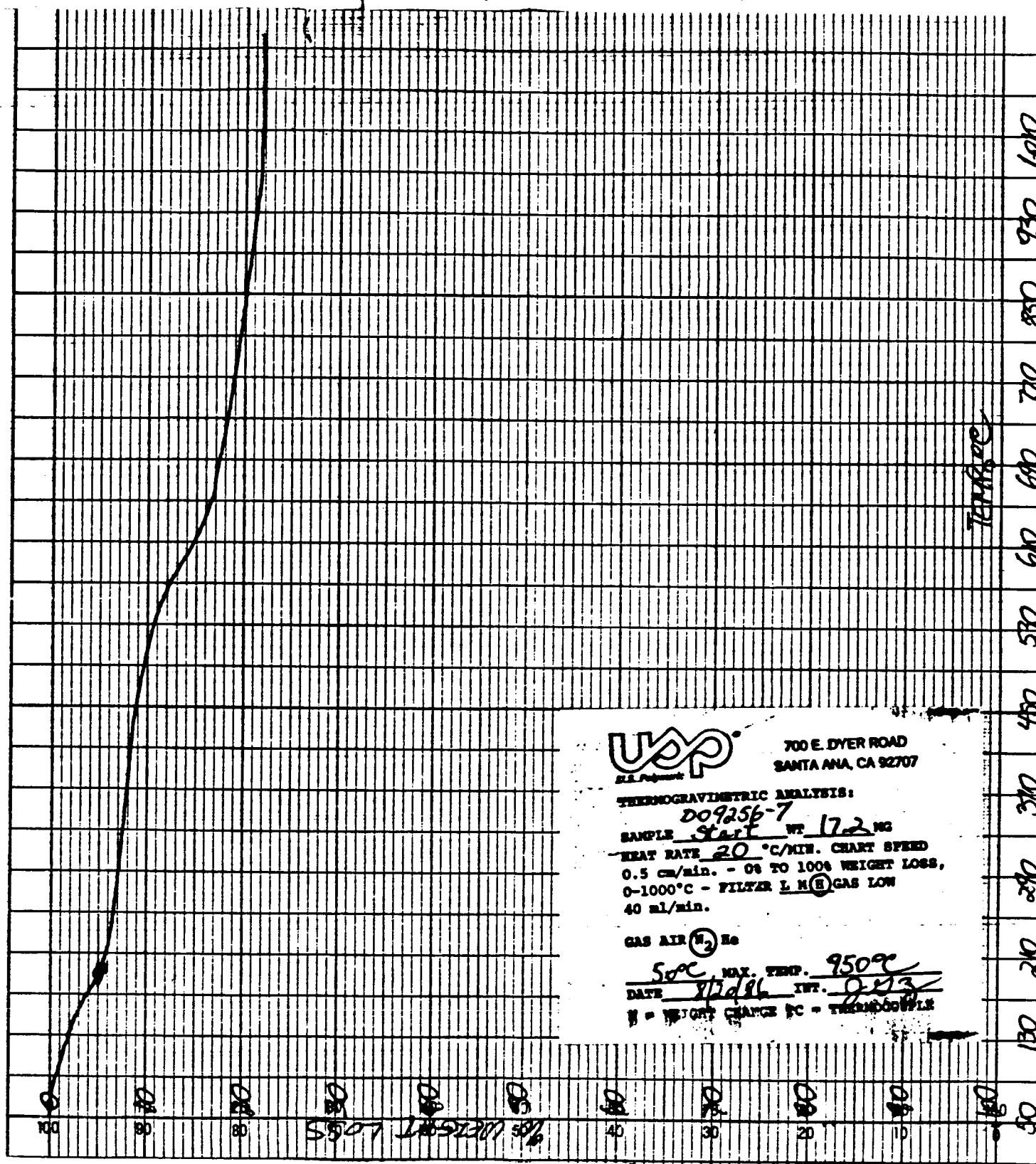




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**THERMOGRAVIMETRIC ANALYSIS:**

SAMPLE Start WT 17.2 MG

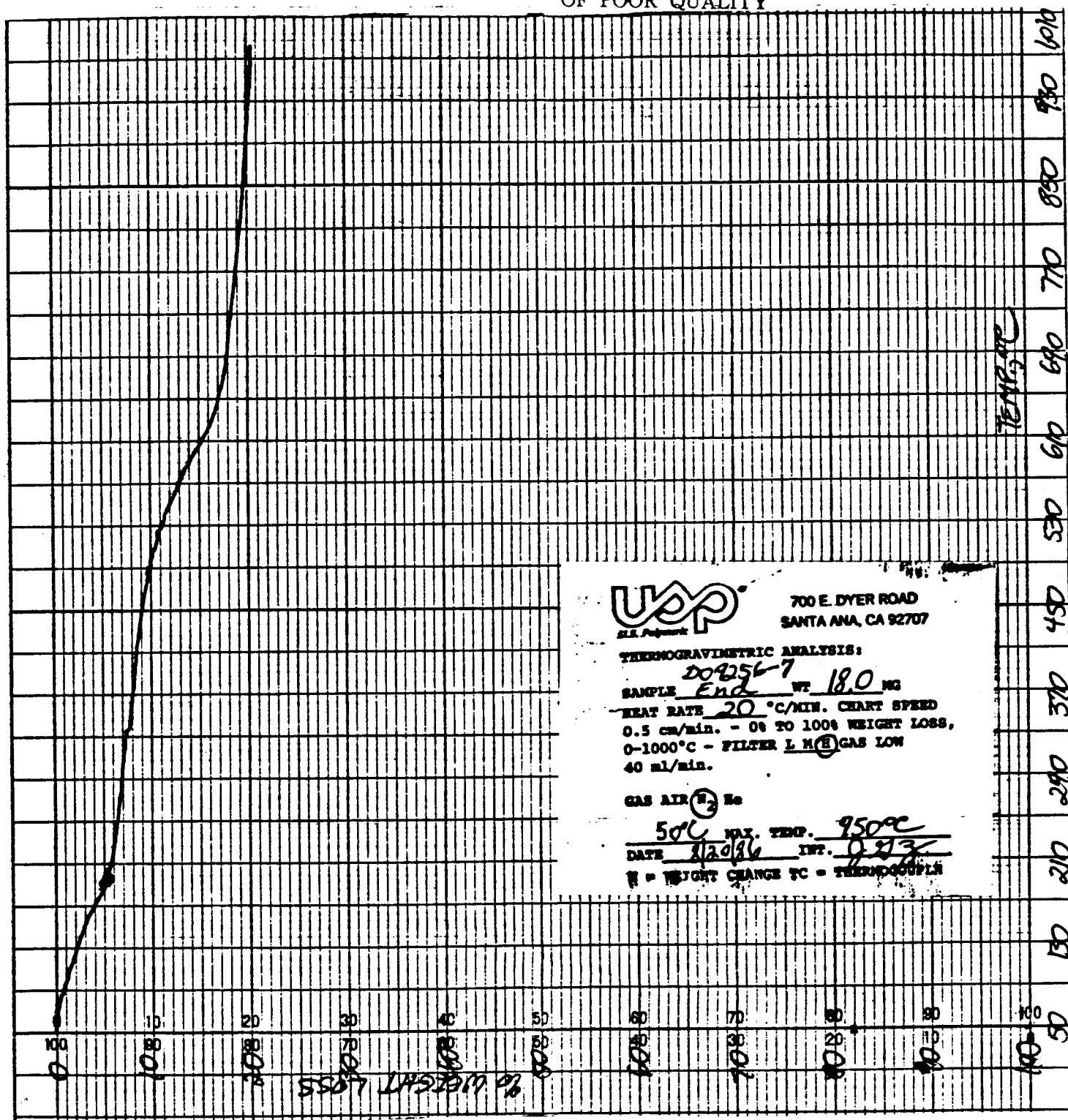
HEAT RATE 20 °C/MIN. CHART SPEED  
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,  
0-1000°C - FILTER L M (H) GAS LOW  
40 ml/min.

GAS AIR (N<sub>2</sub>) He

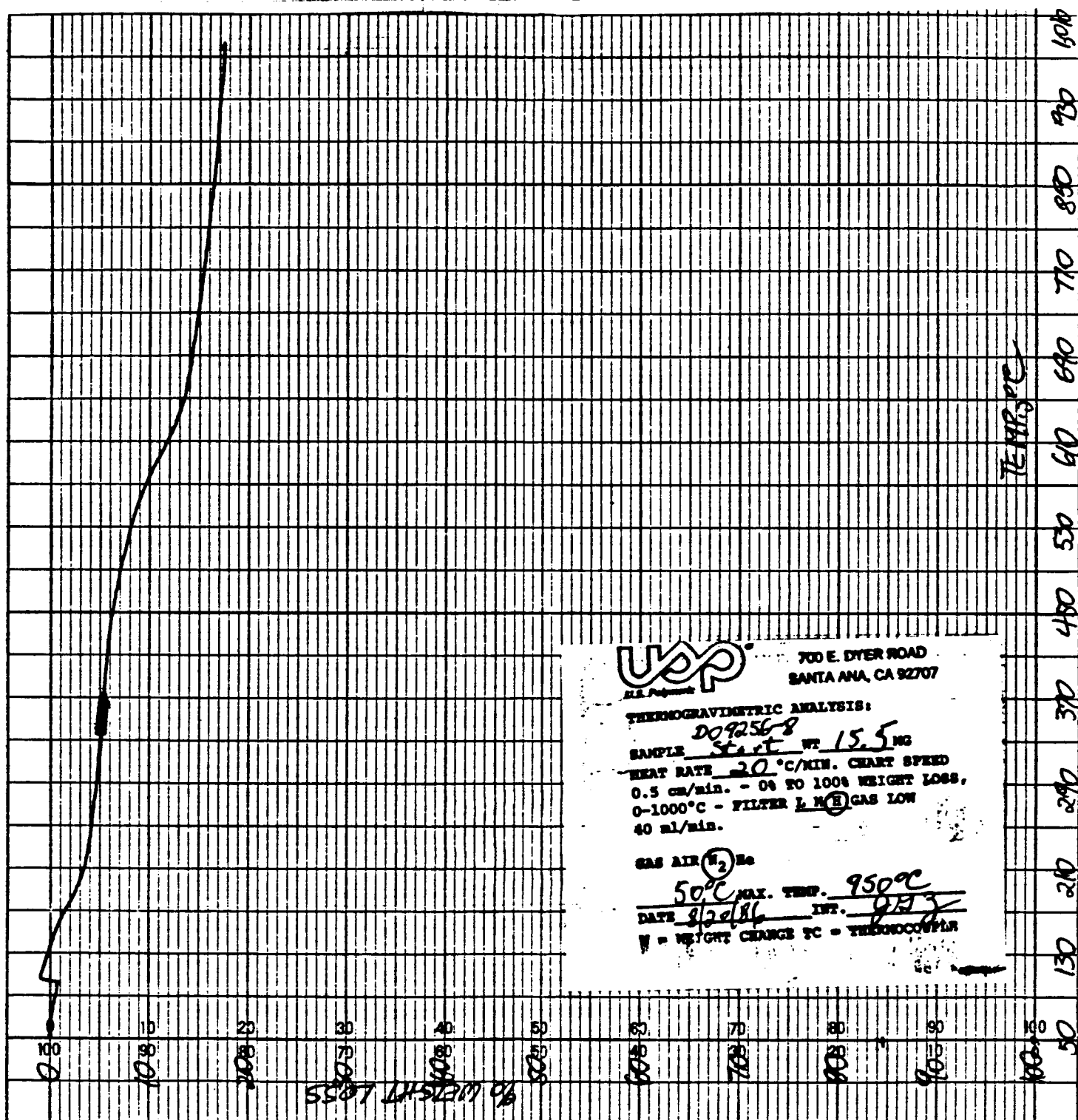
500 MAX. TEMP. 950°C  
DATE 8/12/86 INT. Q-13

% = WEIGHT CHANGE %C = THERMOCOUPLE

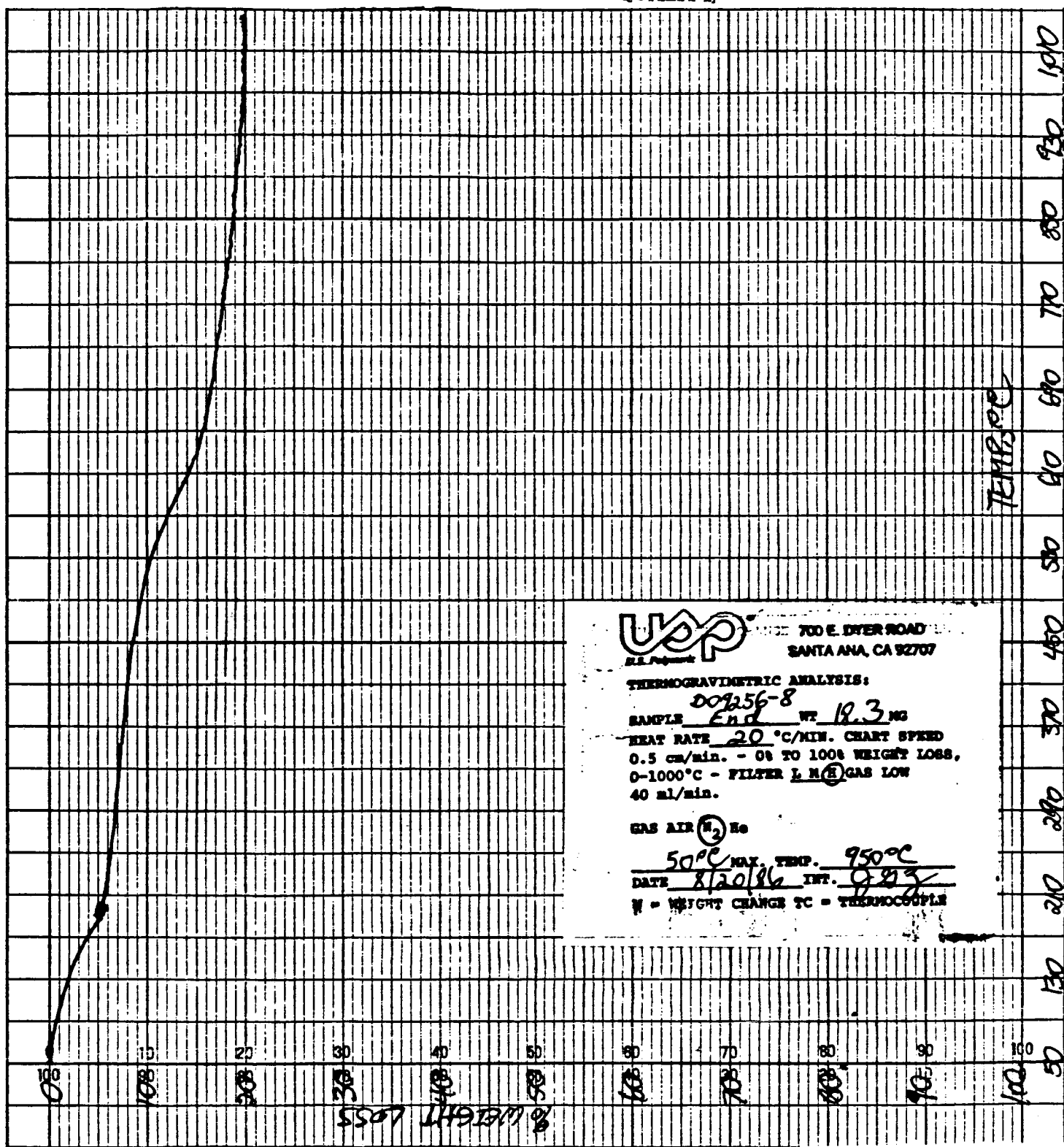
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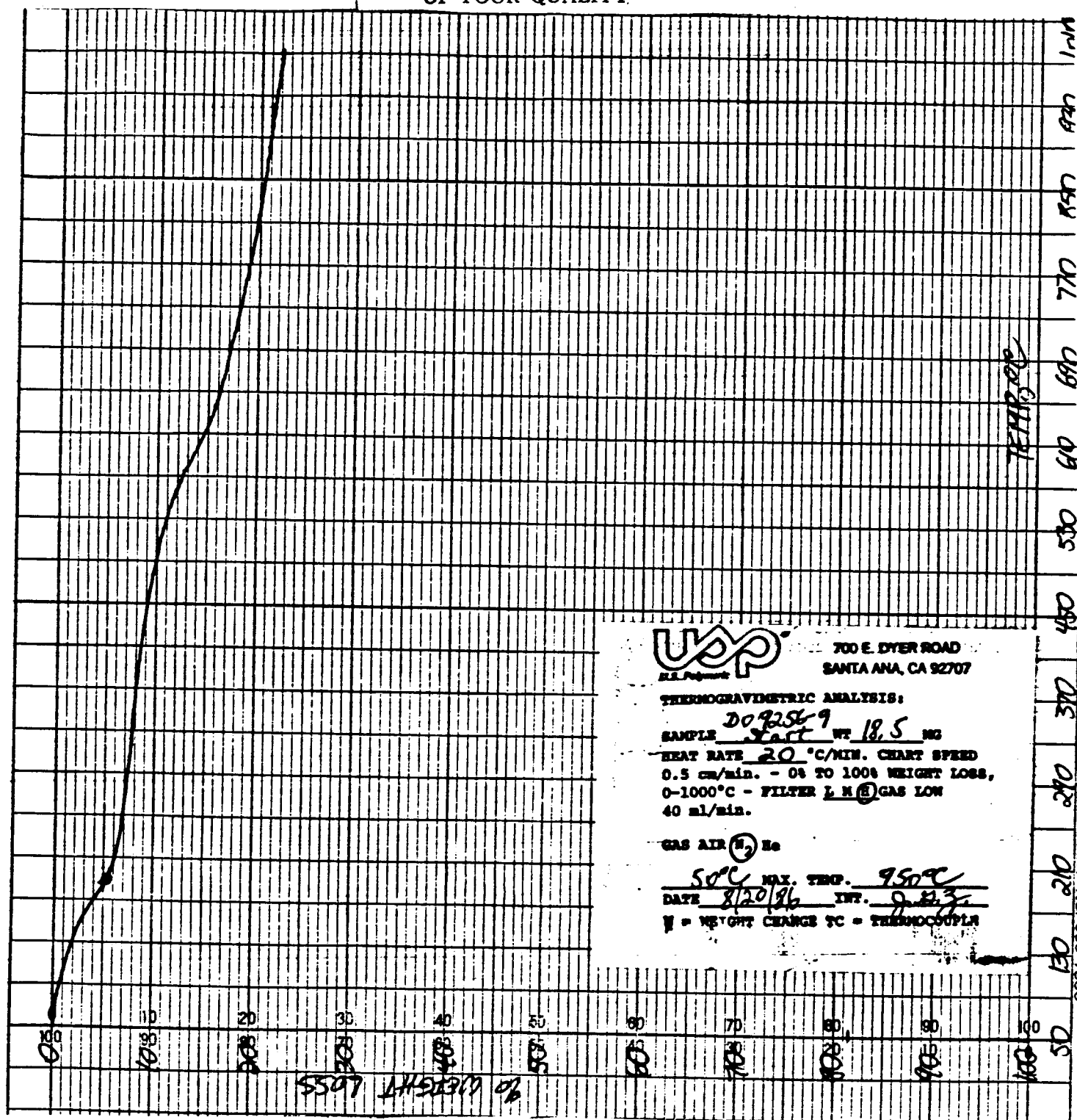
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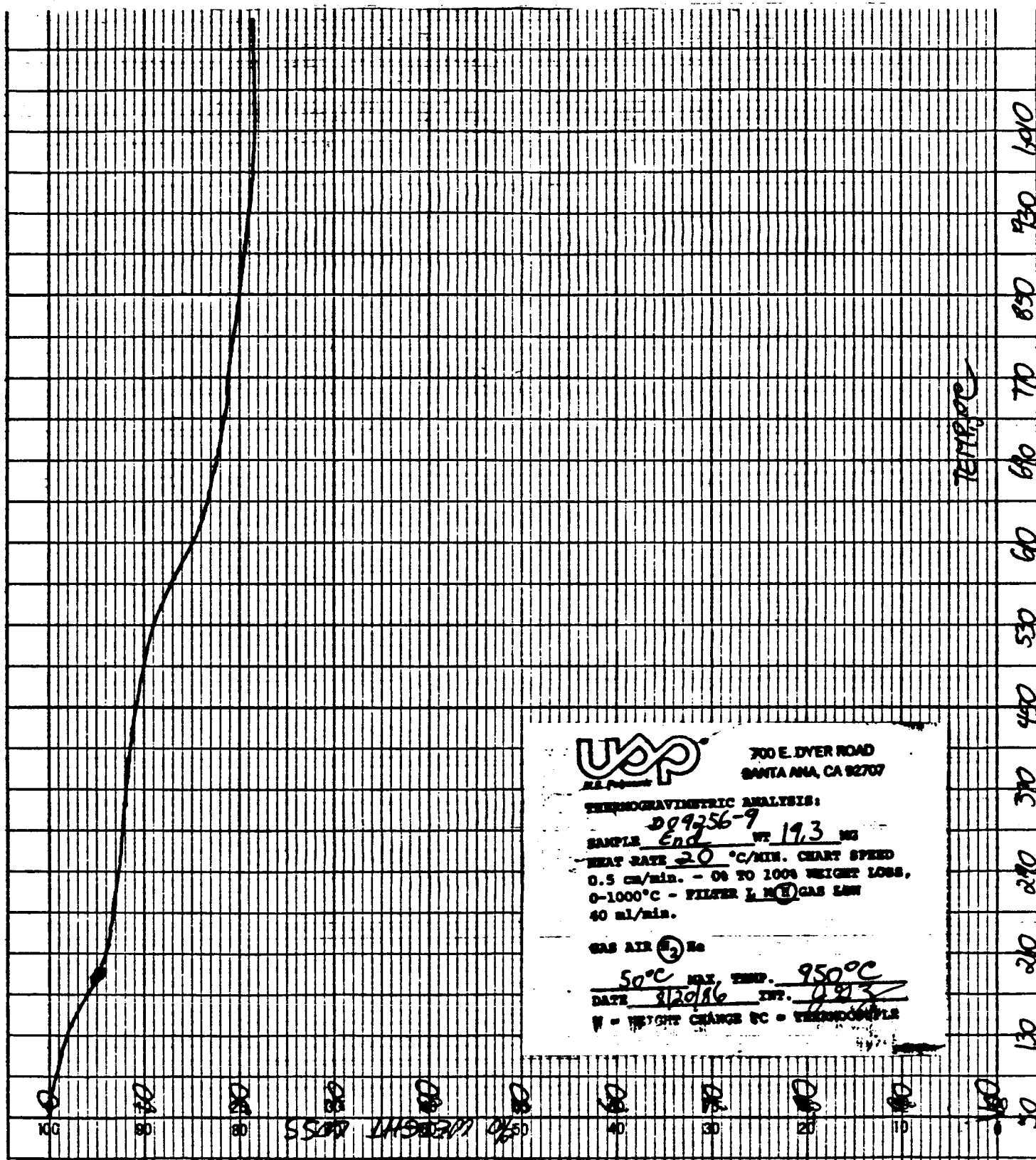
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U.S. Patent

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SANTA ANA, CA 92707

**THERMOGRAVIMETRIC ANALYSIS:**

SAMPLE End 889256-9 WT. 19.3 MG

HEAT RATE 20 °C/MIN. CHART SPEED  
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,  
0-1000°C - FILTER L.N. GAS LBN  
40 ml/min.

GAS AIR (2) He

50°C MAX. TEMP. 950°C  
DATE 8/20/86 INT. 889256-9

W = WEIGHT CHANGE %C = THERMOGRAPHY

**PART NO. 990088**

TMA (psi/100F)  
SCALE, mils/in 0.1/0.2  
MODE Expansion  
SAMPLE SIZE 0.651  
LOAD, g 10  
DY, (10X), (mils/min) 100

$$= \frac{1.5195}{152.0} = \frac{1}{99}$$
$$\frac{56000}{0.25} = 224000$$

MEASURED VARIABLE\_

**ouPont instruments**



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CHART 21M2

PART NO. 990088

RUN NO. 1011410  
 OPERATOR PH  
 SAMPLE DO 92 56-7-3 MAR-2  
 ATM 400 @ STD  
 FLOW RATE 3-5 cc/d

T-AXIS  
 SCALE °C/in 50/20  
 PROG. RATE °C/min 10  
 HEAT / COOL ISO  
 SHIFT in 0

DTA-DSC  
 SCALE °C/in (mcal/sec)/in  
 WEIGHT, mg \_\_\_\_\_  
 REFERENCE \_\_\_\_\_

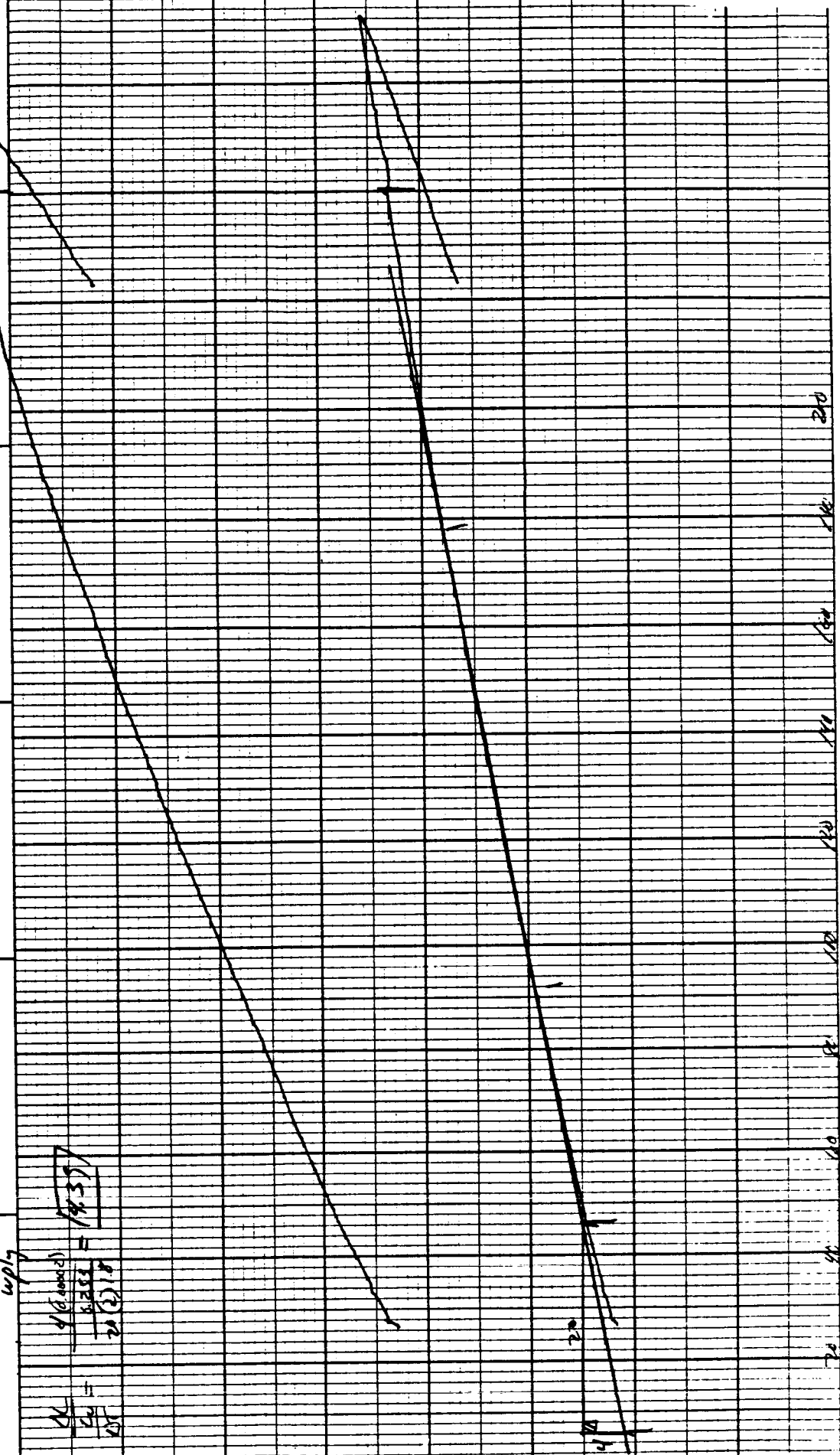
TGA  
 SCALE, mg/in \_\_\_\_\_  
 SUPPRESSION, mg \_\_\_\_\_  
 WEIGHT, mg \_\_\_\_\_  
 TIME CONST., sec \_\_\_\_\_  
 dY, (mg/min) / in \_\_\_\_\_

TMA (µin/in°F)  
 SCALE, mils/in 0.1/0.2  
 MODE EXHAUST  
 SAMPLE SIZE 0.253  
 LOAD, g 1.6  
 dY, (10X), (mils/min) / in \_\_\_\_\_

wplg

$\frac{dL}{dT} = \frac{d(6.000d)}{d(2.0)} = 14.39$

$\frac{dL}{dT} = \frac{8.200}{20(2.0)} = 14.39$



U.S. POLYMERIC DEC 2  
 Sample: DP256-1 Start: 18.0 sec  
 Run Rate: 20 °C/min Range: 2.0 kcal/sec  
 Recorder Spdl: 50 mm/min Speed: 10 mm/min  
 Temp Limits: Lower: 50 Upper: 350  
 Mode: Hold/Auto/Cool Cycle Cooling Rate: 10 °C/min  
 Operator: ALX Date: 9-9-84

EXOTHERM

23.6%

177°C

9-8-84 LAST CALIBRATION DATE

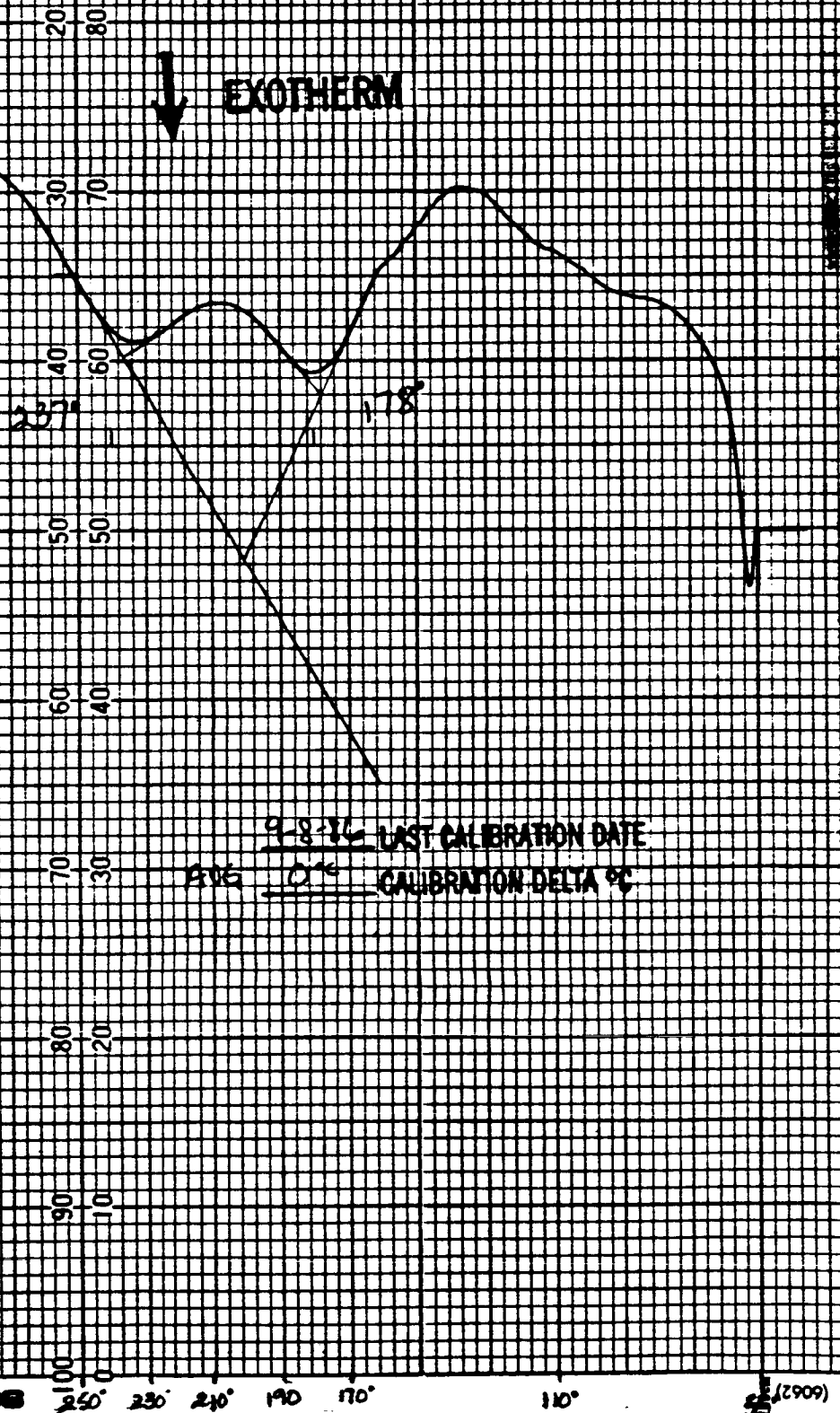
ANG 0.4 CALIBRATION DELTA °C

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U.S. POLYMER DSC2

Sample D39254...1... End... Wt. 14.9... mg  
 Heat Rate... 10... °C/min. Range... 2... mW/mg  
 Recorder Span... 20... mV Chart Speed... 10... mm/min  
 Temp. Limits Lower... 50... °C Upper... 350... °C  
 Mode Hold/AutoCool/Cycle Cooling Rate... 20... °C/min  
 Operator... ALK... Date... 9-11-86

↓ EXOTHERM



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OF POOR QUALITY

U.S. POLYMER CORP. DSC-2

Sample DO256-2 Start Wt 21.7 mg  
 Heat Rate 20 °C/min Range 2.5 mcal/sec  
 Recorder Span 50 mV Chart speed 10 mm/min  
 Temp Limits Lower 50 °C Upper 350 °C  
 Hold/Auto/Cool Cycle Cooling Rate 40 °C/min  
 Operator ALL Date 9-9-86

EXOTHERM



234°

20

30

40

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70

80

90

100

110

120

130

140

150

160

170

180

190

200

210

220

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240

250

260

270

280

290

300

310

320

330

340

350

9-8-86

LAST CALIBRATION DATE

AVG 0.1°

CALIBRATION DELTA °C

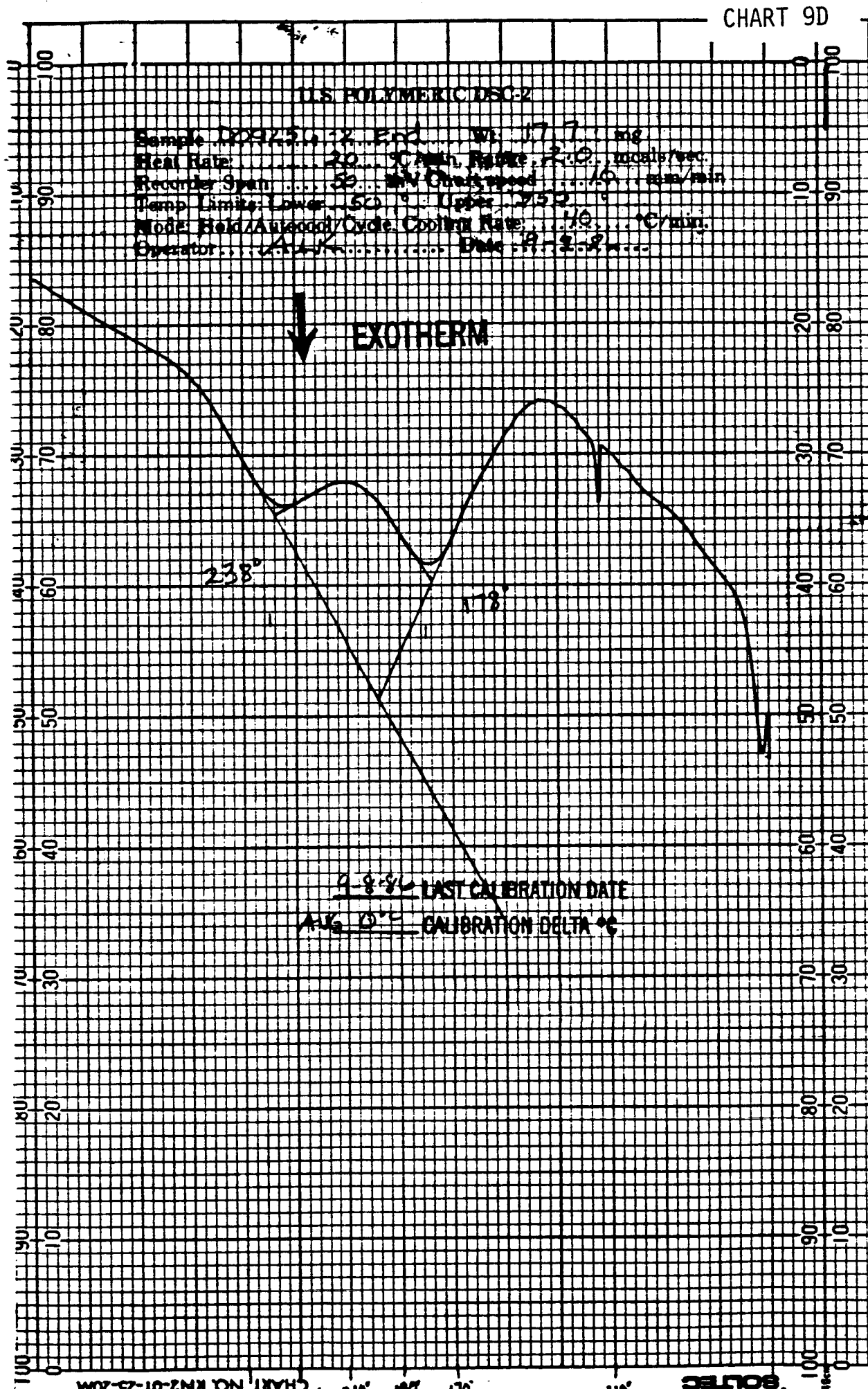
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CHART NO. RN2-01-25-20M  
 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

U.S. POLYMERICS DSC-2

Sample: D09450-12 End: Wt: 17.7 mg  
 Heat Rate: 20 °C/min, Rate: 2.0 mcal/sec.  
 Recorder Span: 50 mV Chart speed: 10 mm/min  
 Temp Limits: Lower: 50 °C Upper: 252 °C  
 Mode: Hold/Autohold/Cycle Cooling Rate: 40 °C/min.  
 Operator: ALK Date: 8-2-8

↓ EXOTHERM



9-8-86 LAST CALIBRATION DATE

11.0 °C CALIBRATION DELTA °C

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OF POOR QUALITY

U.S. POLYMERIC DSC-2

Sample COA251-3 Start Wt. 12.8 mg  
 Heat Rate: 30 °C/min Range 2.0 mcal/mg  
 Recorder Span: 50 mV Chart speed 10 mm/min  
 Temp. Limits: Lower 50 °C Upper 350 °C  
 Mode: Hold/Autocool/Cycle Cooling Rate: 40 °C/min  
 Operator AK Date 1-1-86

EXOTHERM

234°

179°

9-8-84 LAST CALIBRATION DATE

AVG 0.0 CALIBRATION DELTA °C

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OF POOR QUALITY



## DSC POLYMERIC DSC-2

Sample DO9250-3 and Wt. 18.3 mg  
 Heat Rate: 20 °C/min Range 2.0 mcal/sec  
 Recorder Span: 50 mV Chart speed 1/2 mm/min  
 Temp Limits Lower 50 ° Upper 300 °  
 Mode: Hold/Autocool/Cycle Cooling Rate: 10 °C/min  
 Operator A. KATZMAN Date 9-9-86

EXOTHERM



236°

174°

9-3-86

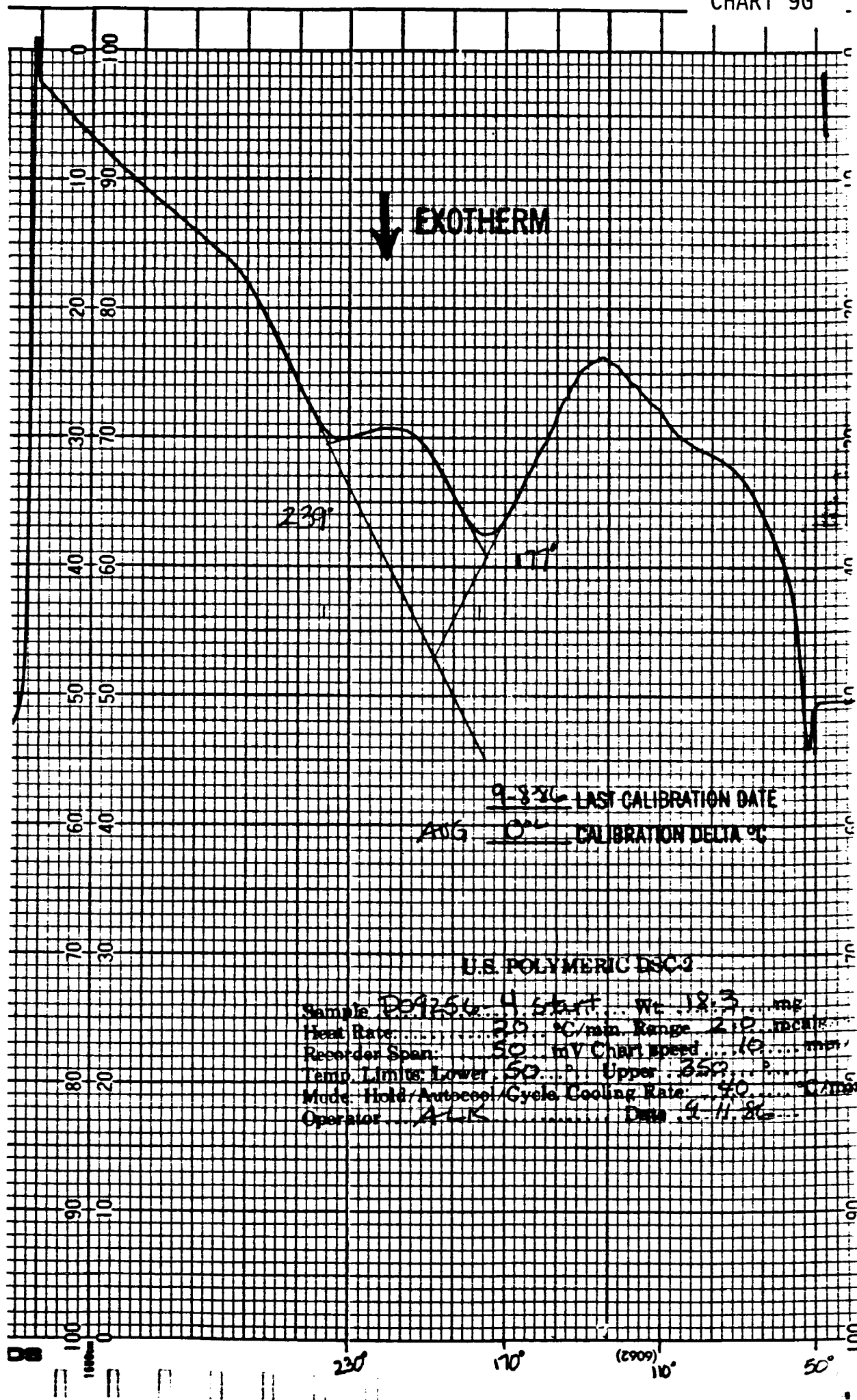
LAST CALIBRATION DATE

AVG

0.1°

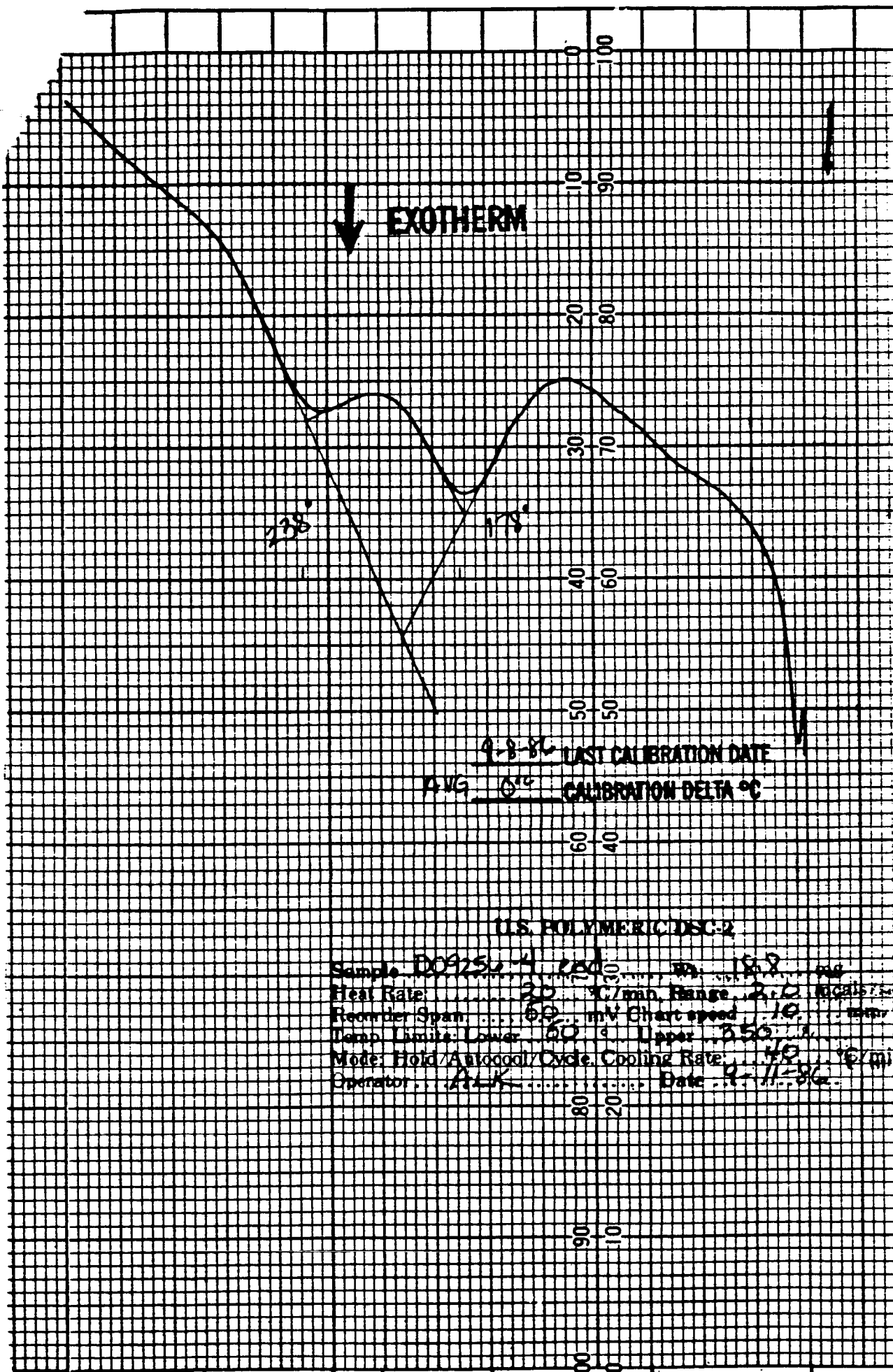
CALIBRATION DELTA °C

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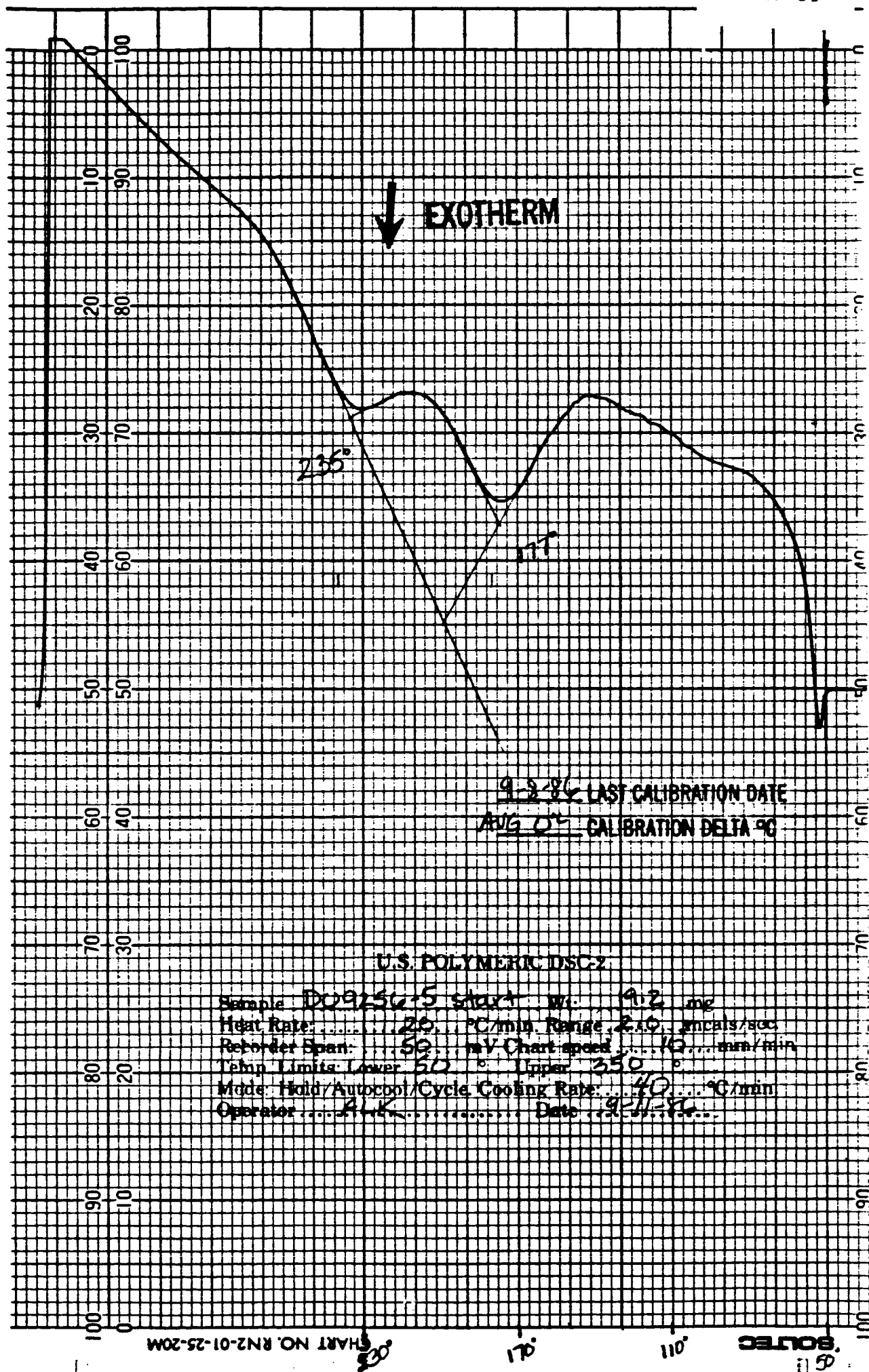




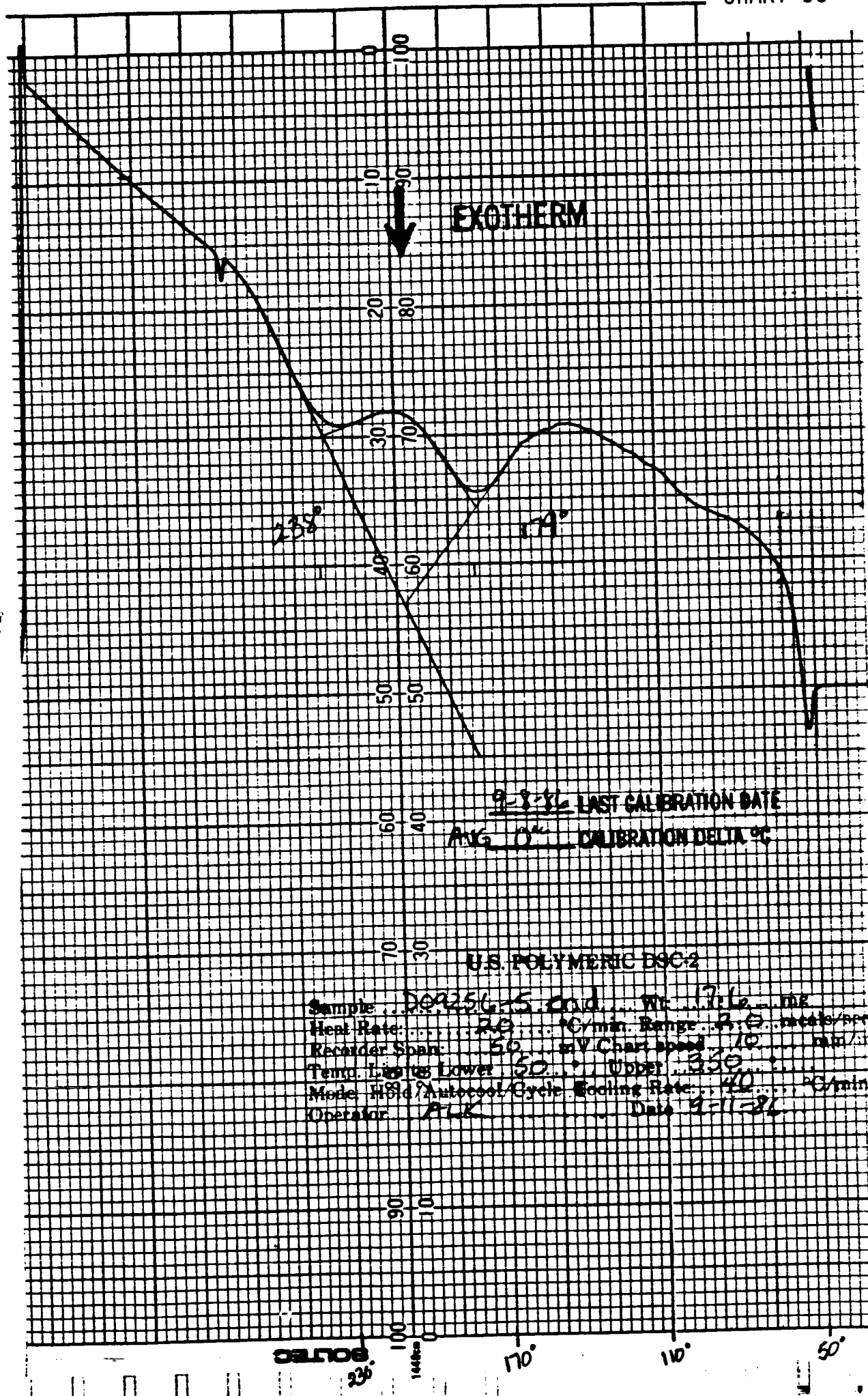
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↓ EXOTHERM

238°

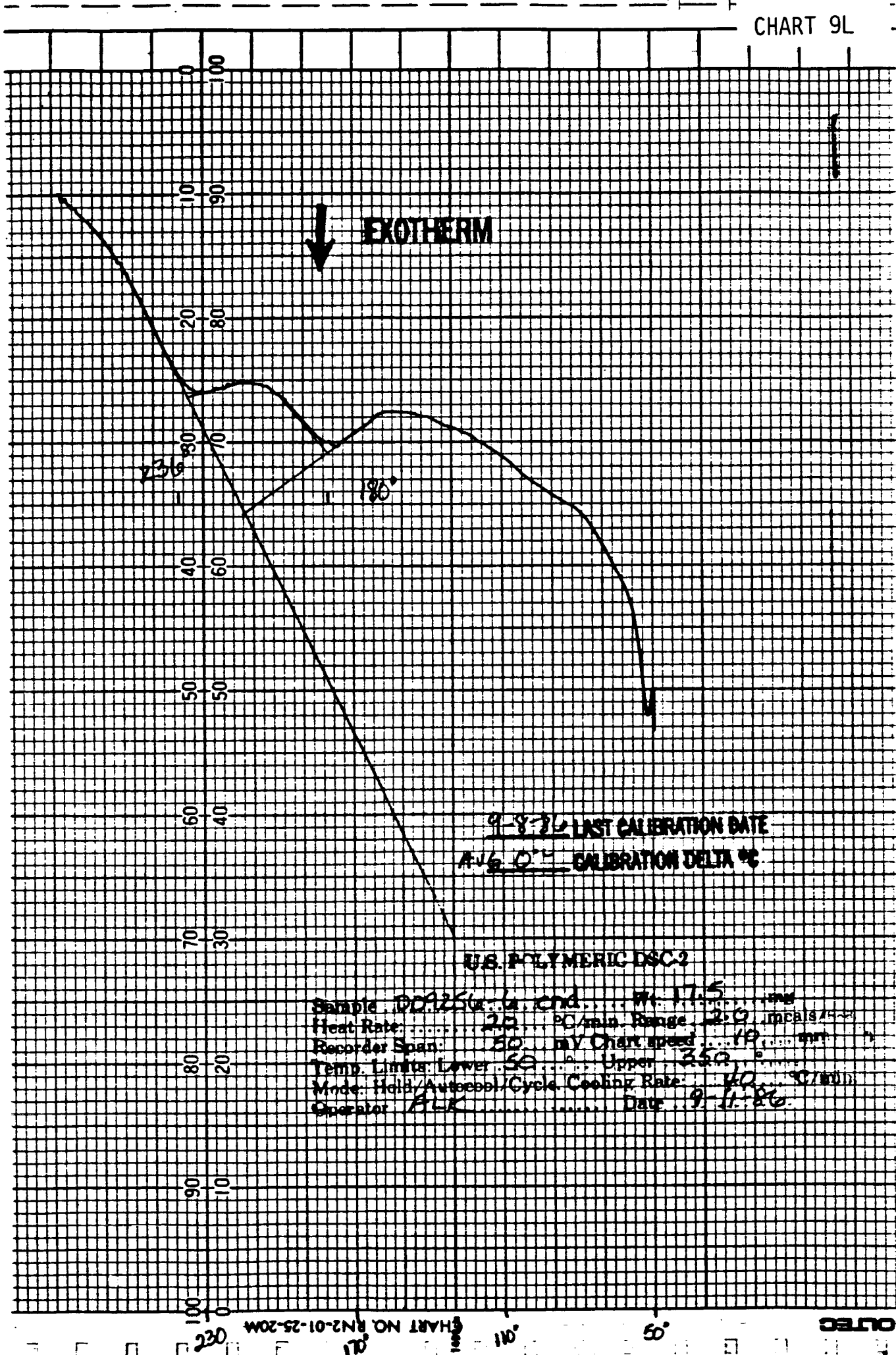
177°

9-8-86 LAST CALIBRATION DATE  
 AVG 0.2° CALIBRATION DELTA °C

U.S. POLYMERIC DSC-2

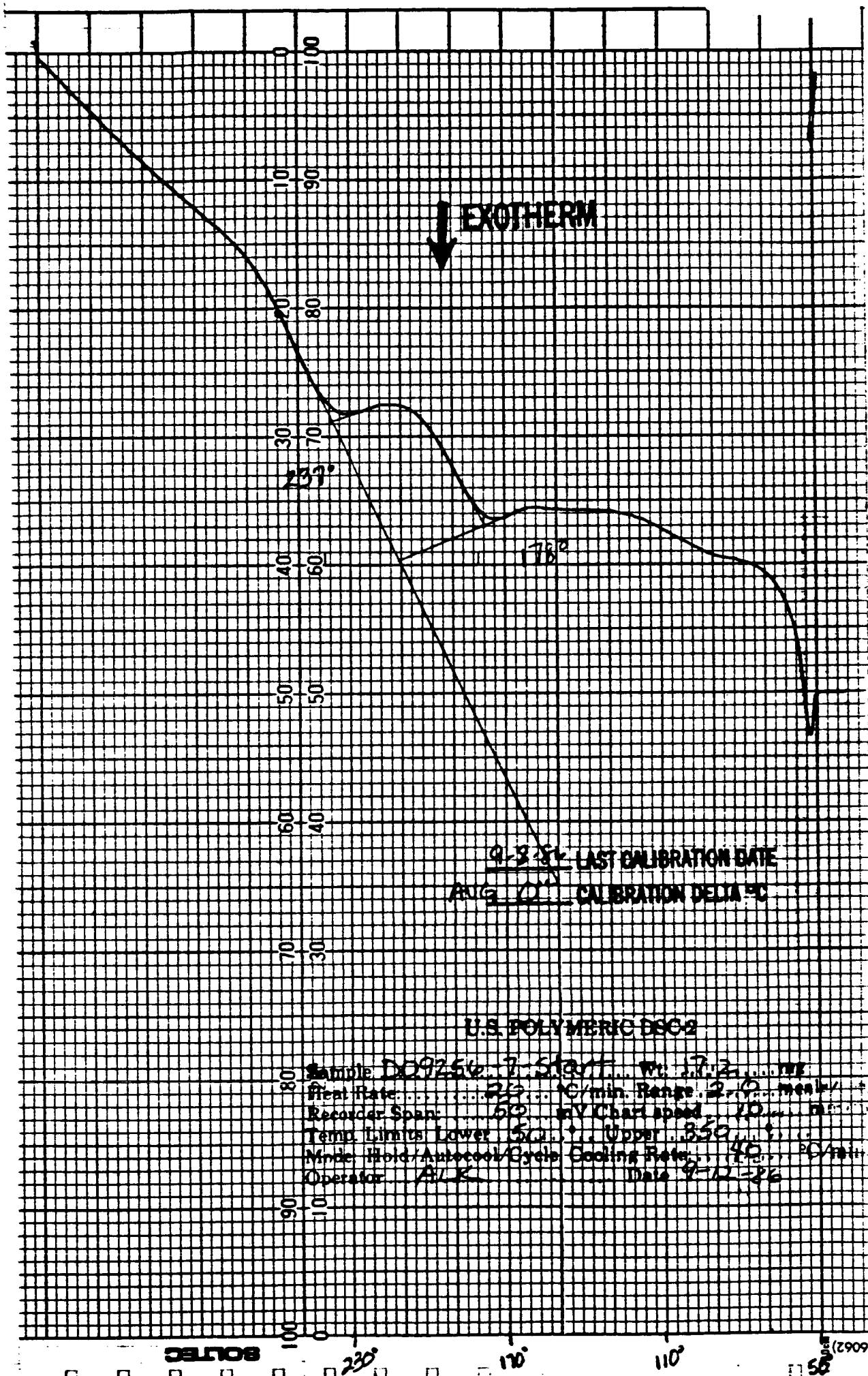
Sample D09250-1a start wt: 11.5 mg  
 Heat Rate: 20 °C/min. Range 2.0 mW  
 Recorder Span: 50 mV Chart speed 10 mm/min  
 Temp. Limits: Lower 50 ° Upper 350 °  
 Mode: Hold/Autocool/Cycle Cooling Rate: 10 °C/min  
 Operator A.K. Date 9-11-86

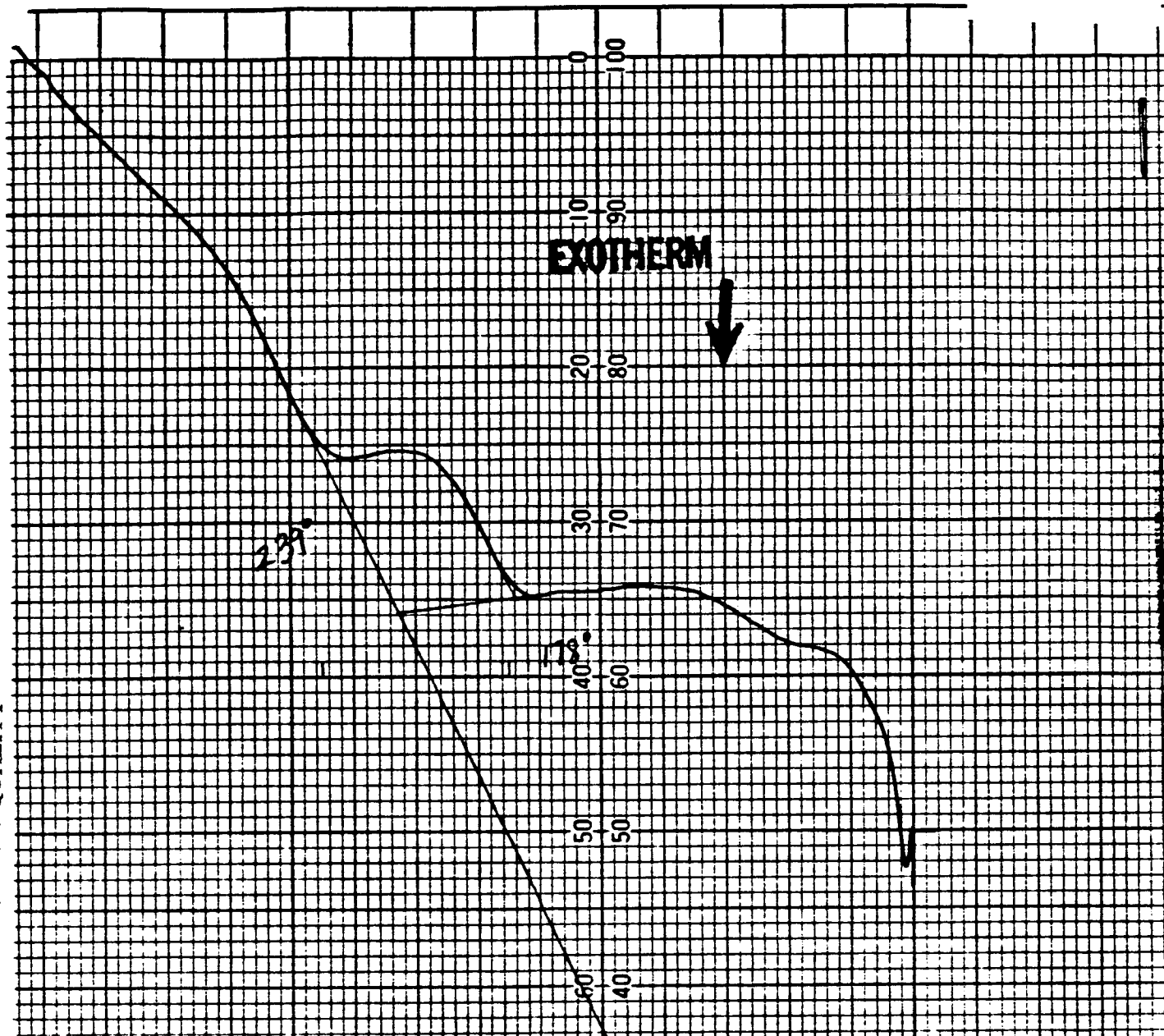
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9-8-86 LAST CALIBRATION DATE  
0.0 CALIBRATION DELTA °C

## DSC POLYMERIC DSC2

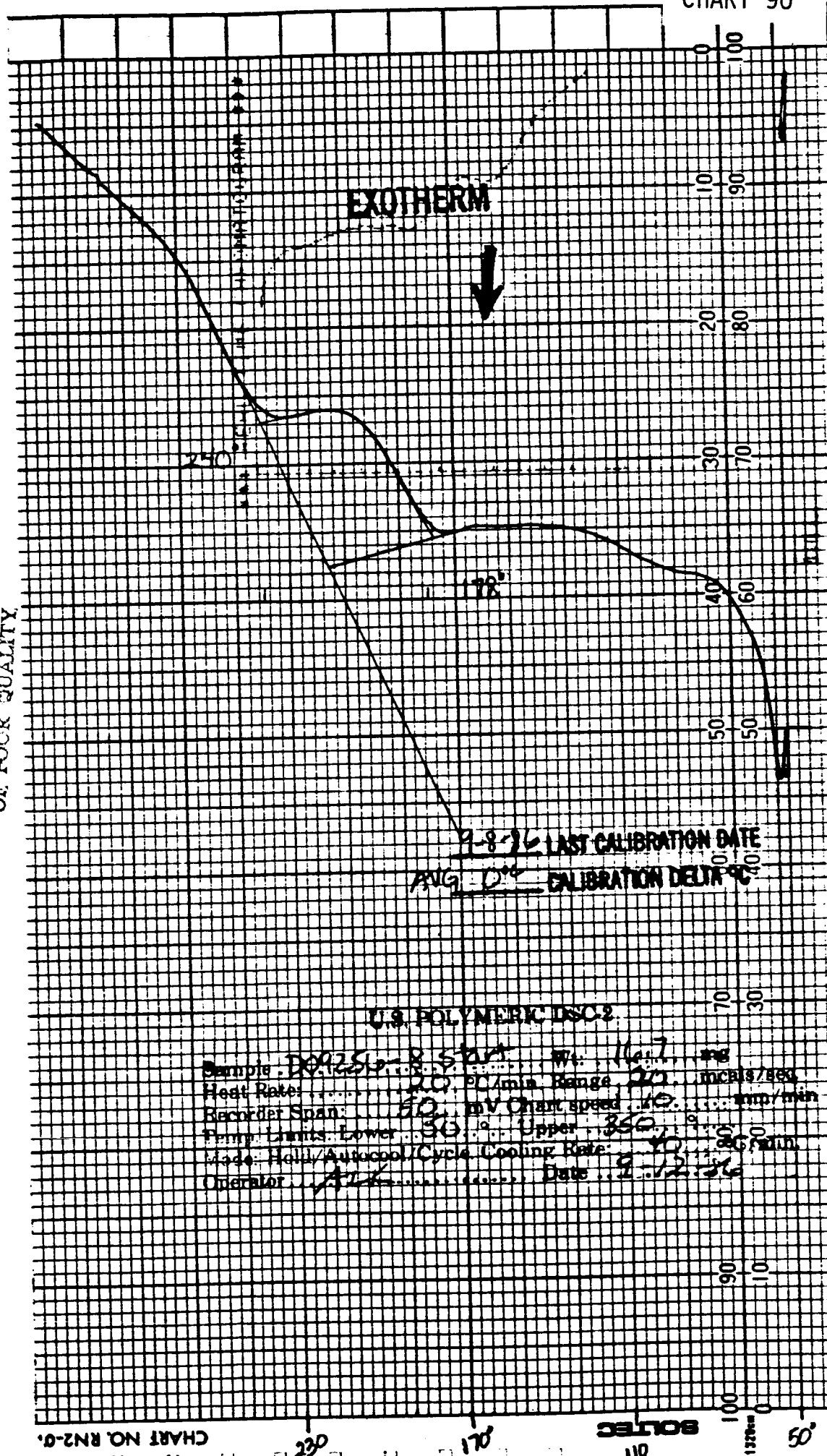
Sample D542SL-7 end Wt. 1.7 g  
 Heat Rate 20 °C/min Range 2.0 mW  
 Recorder Span 50 mV Chart speed 10 mm/min  
 Temp. Limits Lower 50 °C Upper 350 °C  
 Mode Hold/AutoCool/Cycle Cooling Rate 20 °C/min  
 Operator ACK Date 9-12-86

(6062)  
230

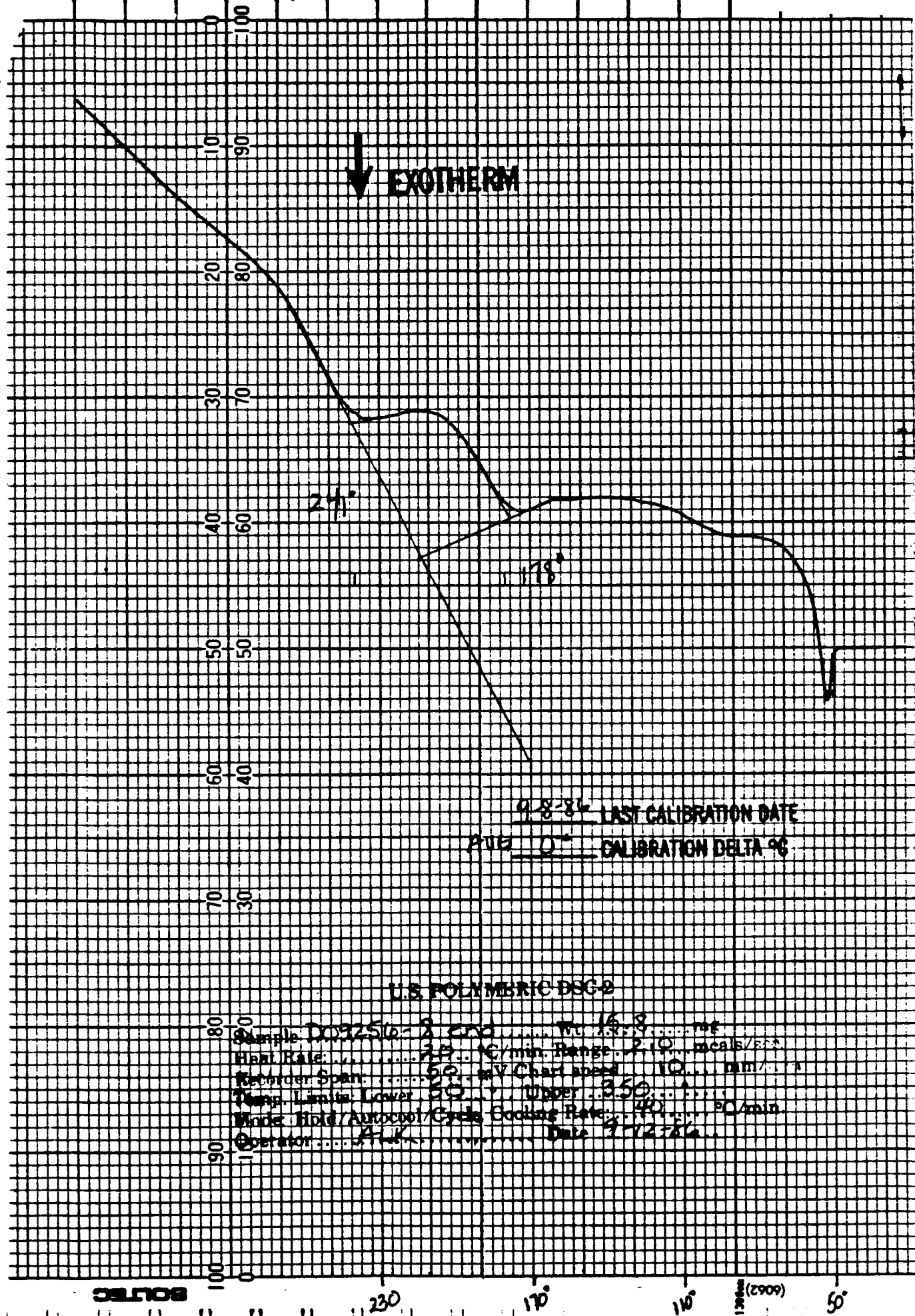
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CHART NO. RN2-01-25-20M  
101

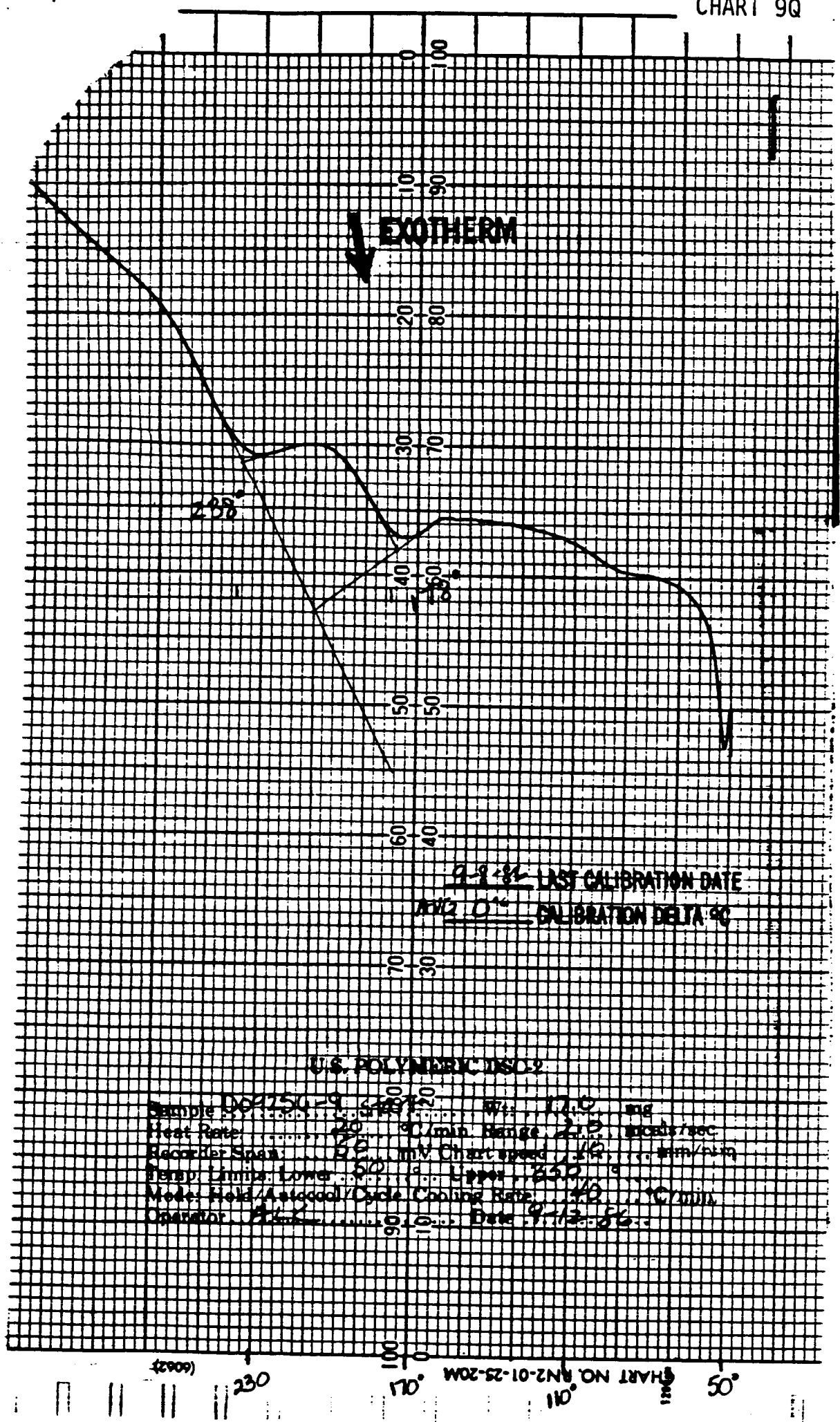
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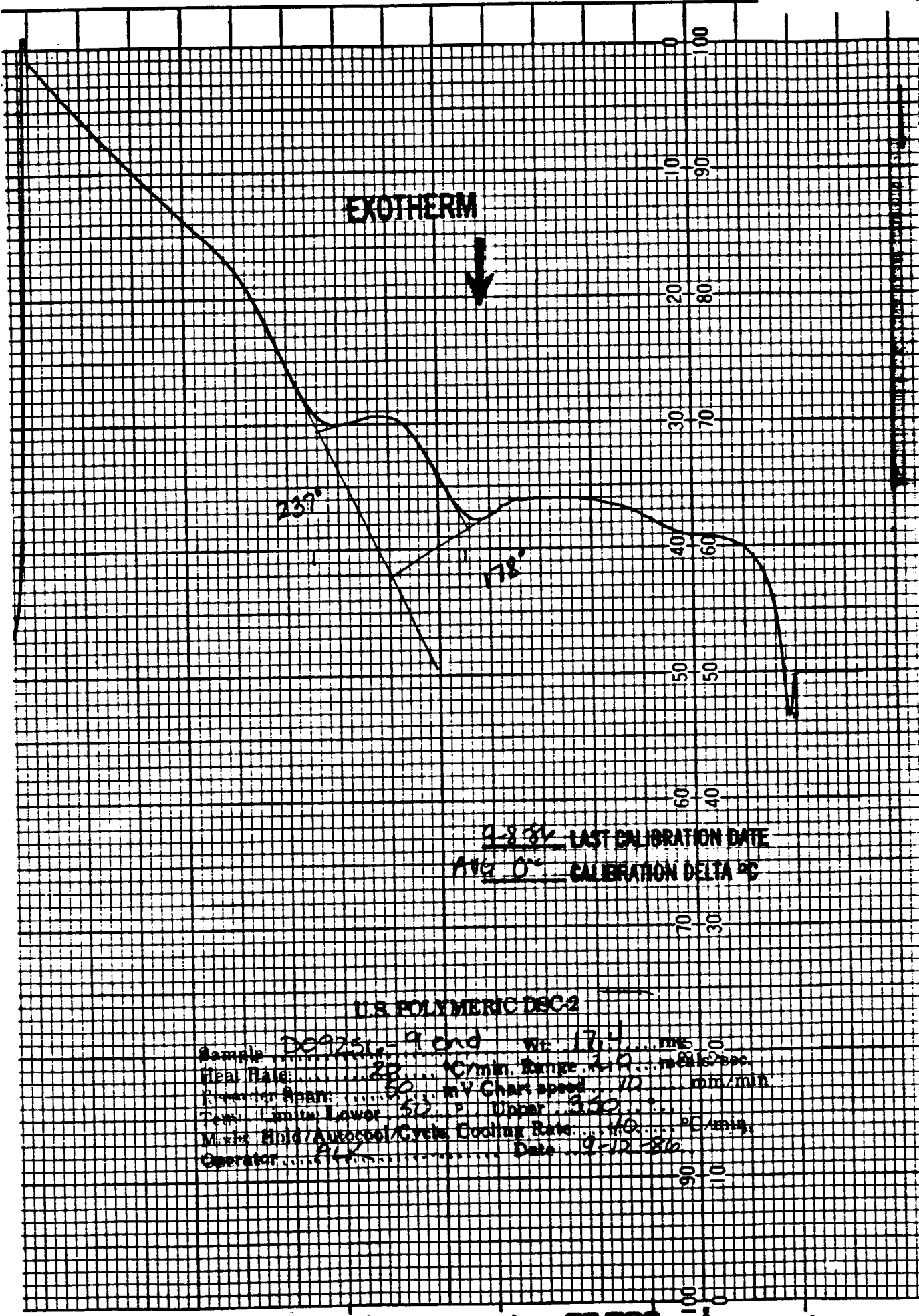


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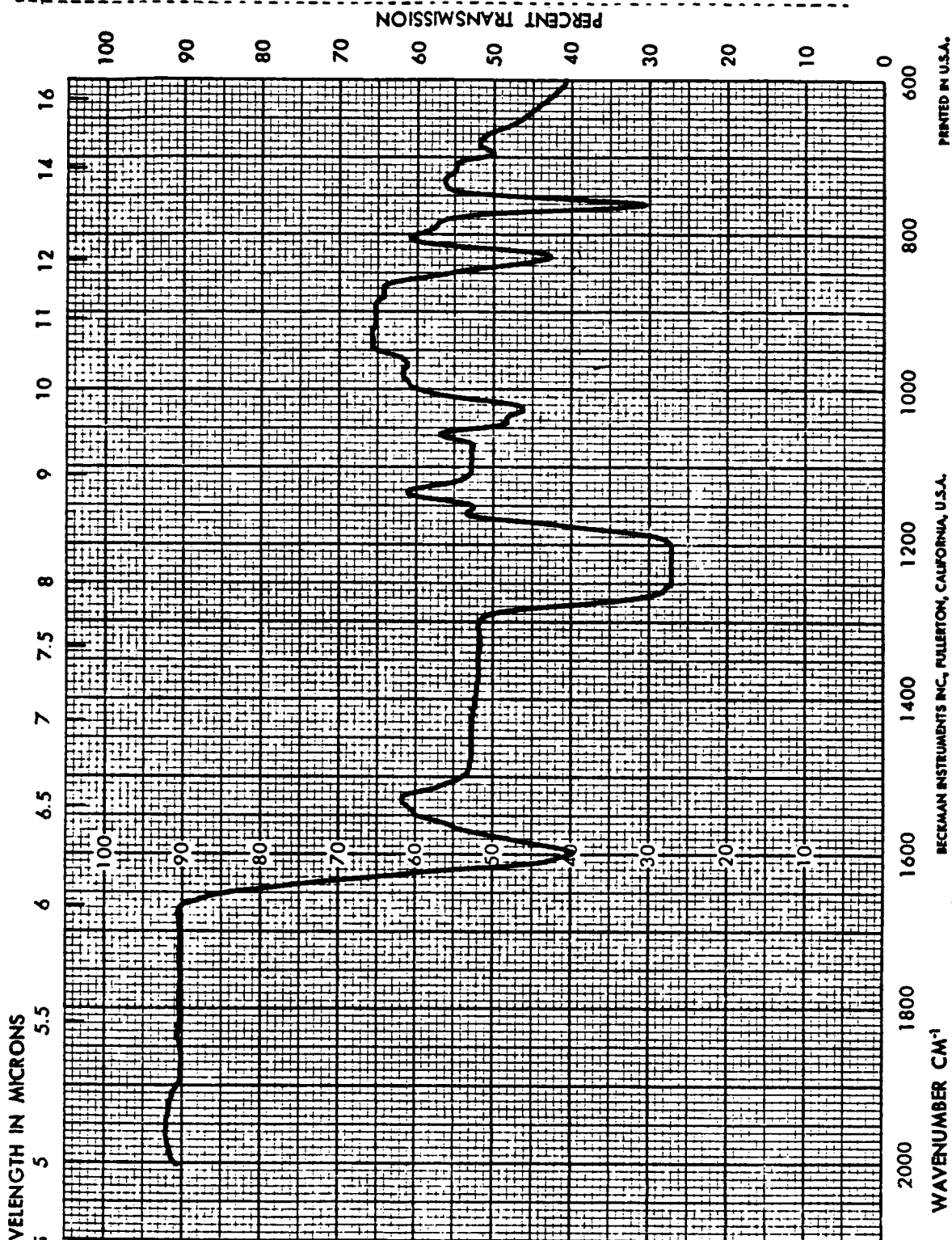
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OF POOR QUALITY



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OF POOR QUALITY



SPECTRUM NO. 15225

DATE 7-08-86

SAMPLE FM 5055 B

D09254 # 5T-1

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NaCl

SOLVENT ACETONE

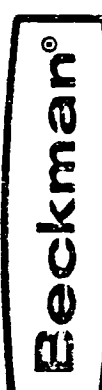
CONCENTRATION 30-50%

PHASE 3

COMMENTS PRE-PREG

MATERIAL

ANALYST V. MIRANDA



INFRARED  
SPECTROPHOTOMETER

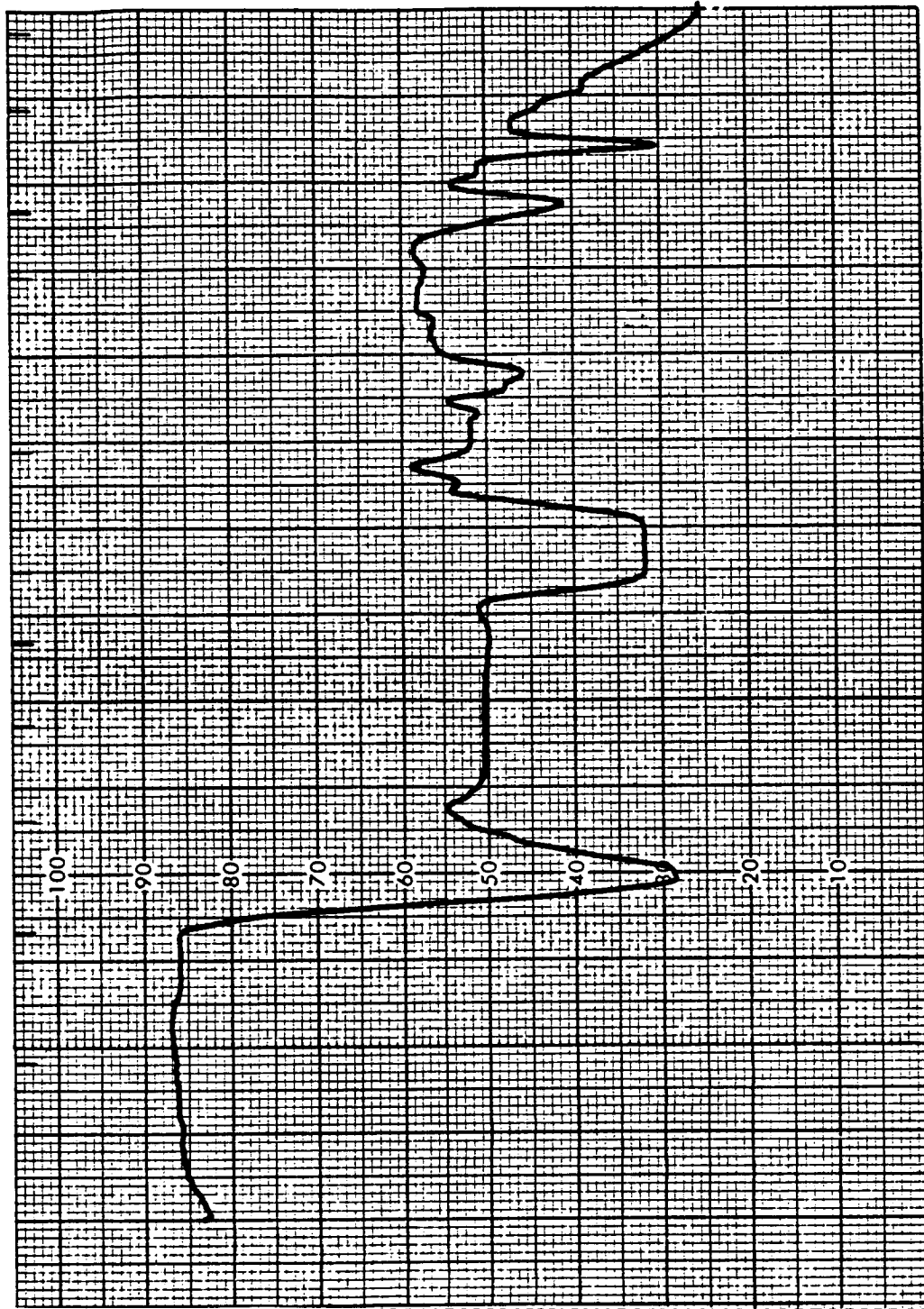
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WAVELENGTH IN MICRONS

5 5.5 6 6.5 7 7.5 8 9 10 11 12 14 16

PERCENT TRANSMISSION

100 90 80 70 60 50 40 30 20 10 0



WAVENUMBER CM<sup>-1</sup>

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CHART 10B

SPECTRUM NO. 15226  
DATE 7-08-84  
SAMPLE FM 5055 B  
509254 # E-1  
SOURCE \_\_\_\_\_  
STRUCTURE \_\_\_\_\_

PATH 0.2 mm KACL  
SOLVENT ACETONE  
CONCENTRATION 30-50%  
PHASE 3  
COMMENTS PRE-PREG  
MATERIAL

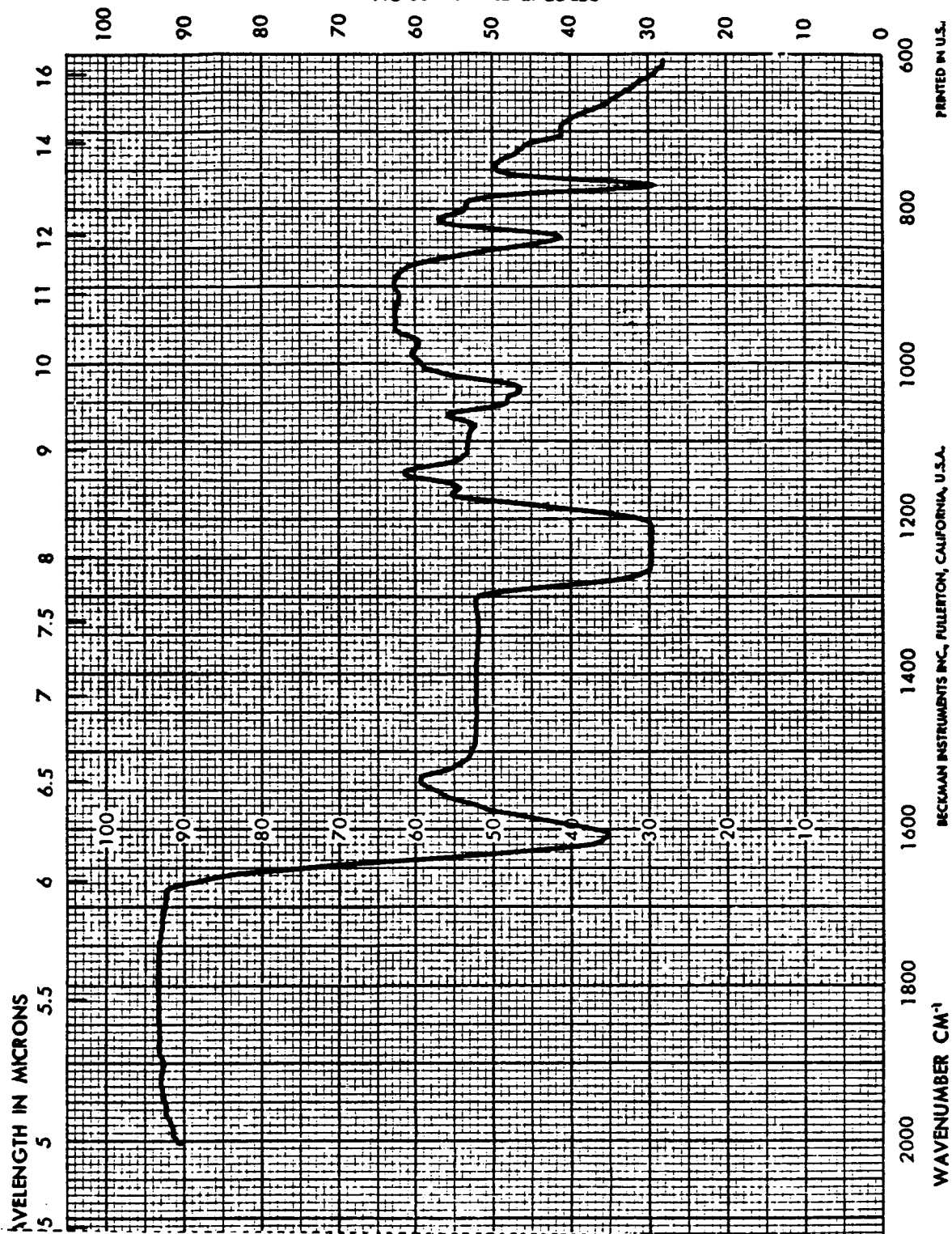
ANALYST V. MIRANDA

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SPECTROPHOTOMETER



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SPECTRUM NO. 15227

DATE 7-09-86

SAMPLE FM 5055 B

DO9256 # ST-2

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NaCl

SOLVENT ACETONE

CONCENTRATION 30-50%

PHASE 3

COMMENTS PRE-PRES

MATERIAL

ANALYST Y. MIRANDA



INFRARED  
SPECTROPHOTOMETER

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WAVENUMBER CM⁻¹

800

1000

1200

1400

1600

1800

2000

WAVENUMBER CM⁻¹

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1200

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1600

1800

2000

WAVENUMBER CM⁻¹

800

1000

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WAVENUMBER CM⁻¹

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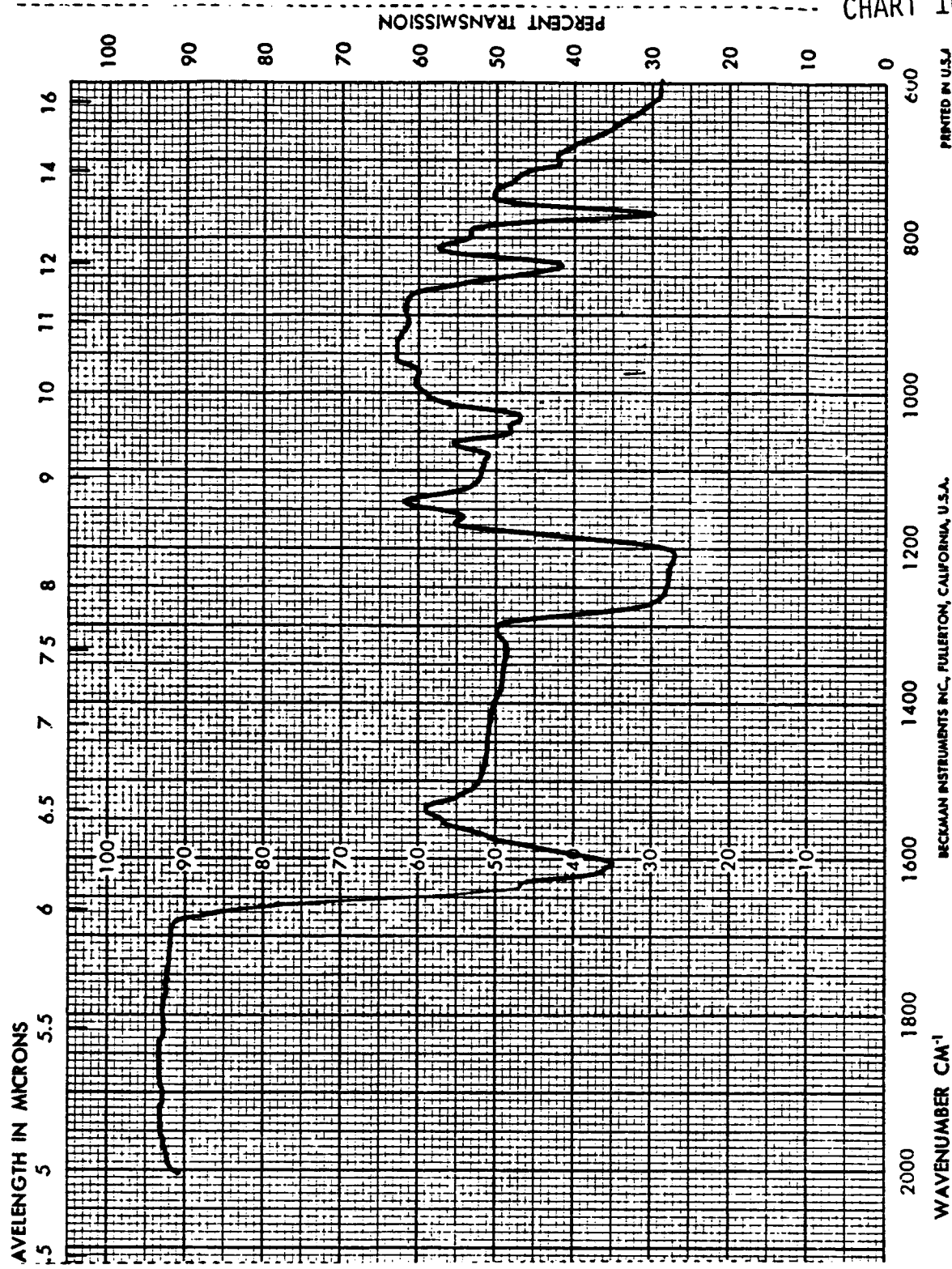
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1600

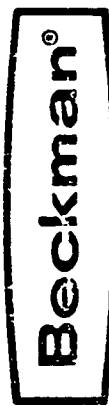
1800

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SPECTRUM NO. 15228  
DATE 7-09-86  
SAMPLE FM 5055 B  
DD9256 # E-2  
SOURCE \_\_\_\_\_  
STRUCTURE \_\_\_\_\_  
PATH 0.2 mm NaCl  
SOLVENT ACETONE  
CONCENTRATION 30-50%  
PHASE 3  
COMMENTS PRE-PRES  
MATERIAL  
ANALYST Y. MIRANDA



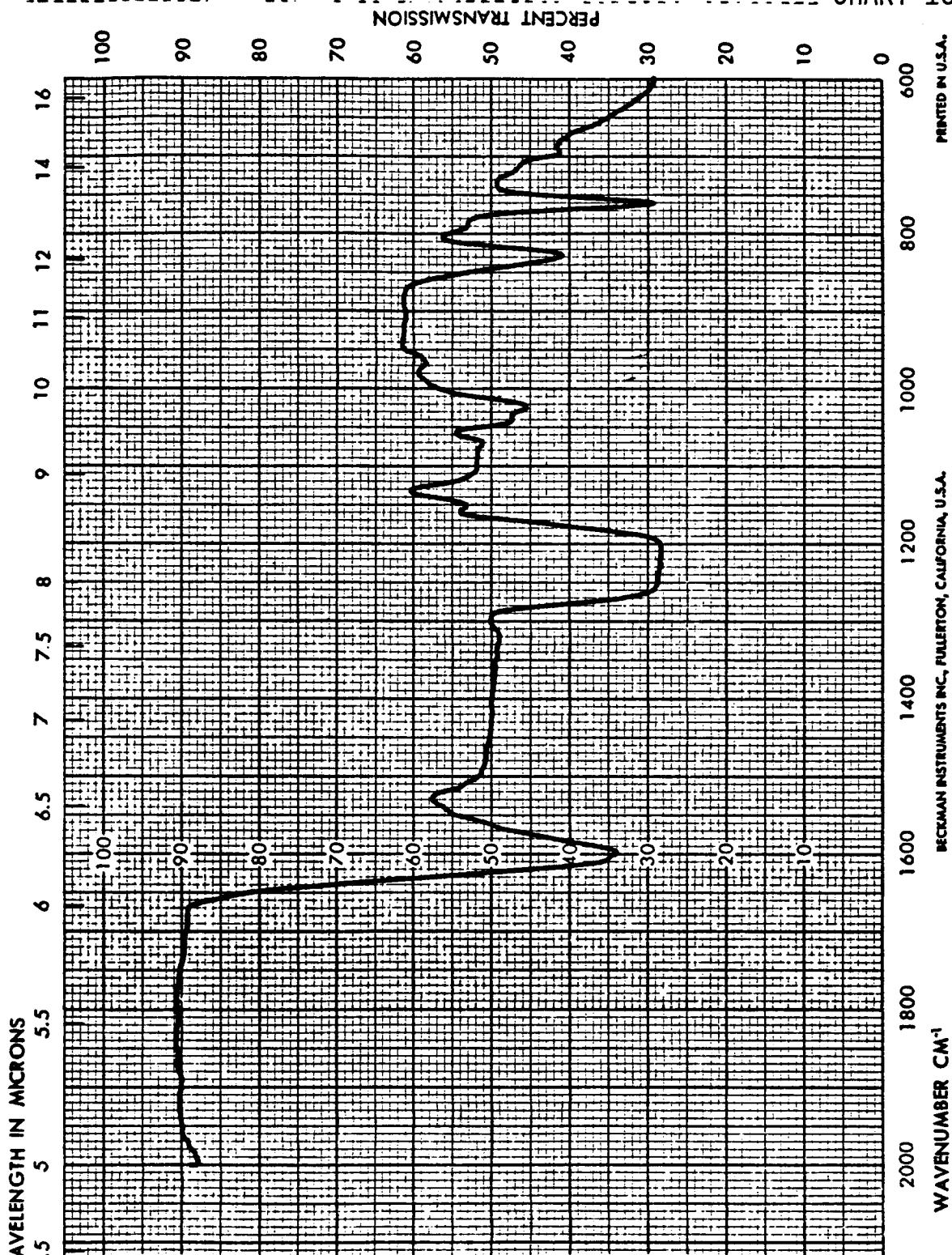
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SPECTROPHOTOMETER

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WAVENUMBER CM⁻¹

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SPECTRUM NO. 15229

DATE 7-09-86

SAMPLE FM 5055B

DO9256 # 5T-2

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 30-50%

PHASE 3

COMMENTS PRE-PREG

MATERIAL

ANALYST V. MIRANDA



INFRARED  
SPECTROPHOTOMETER



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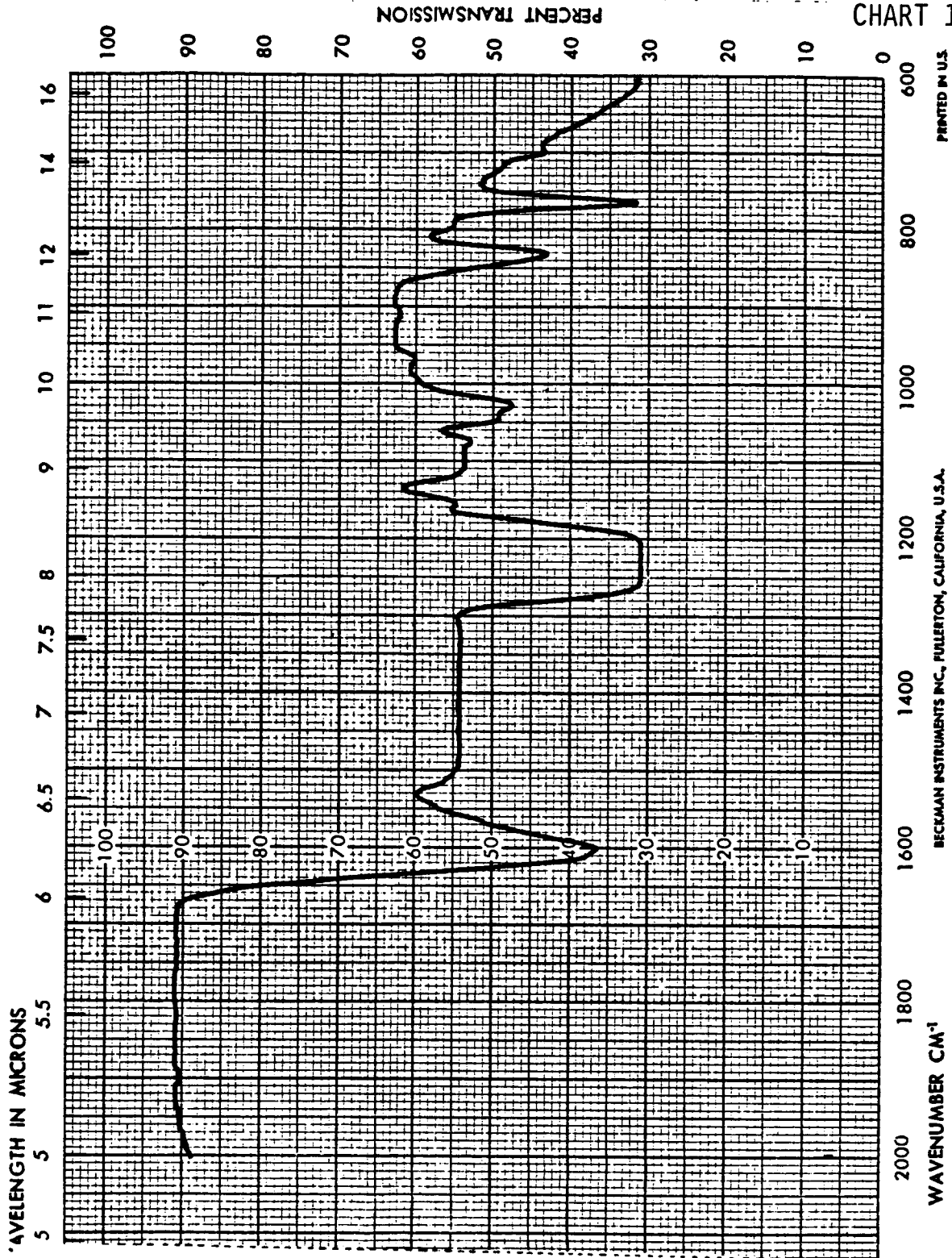


CHART 10F

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WAVENUMBER  $\text{CM}^{-1}$

SPECTRUM NO. 15230

DATE 7-09-86

SAMPLE FM 5055 B

D09256 # F-3

SOURCE

STRUCTURE

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 30-50%T

PHASE 3

COMMENTS PRE-PREG

MATERIAL

ANALYST V. MIRANDA

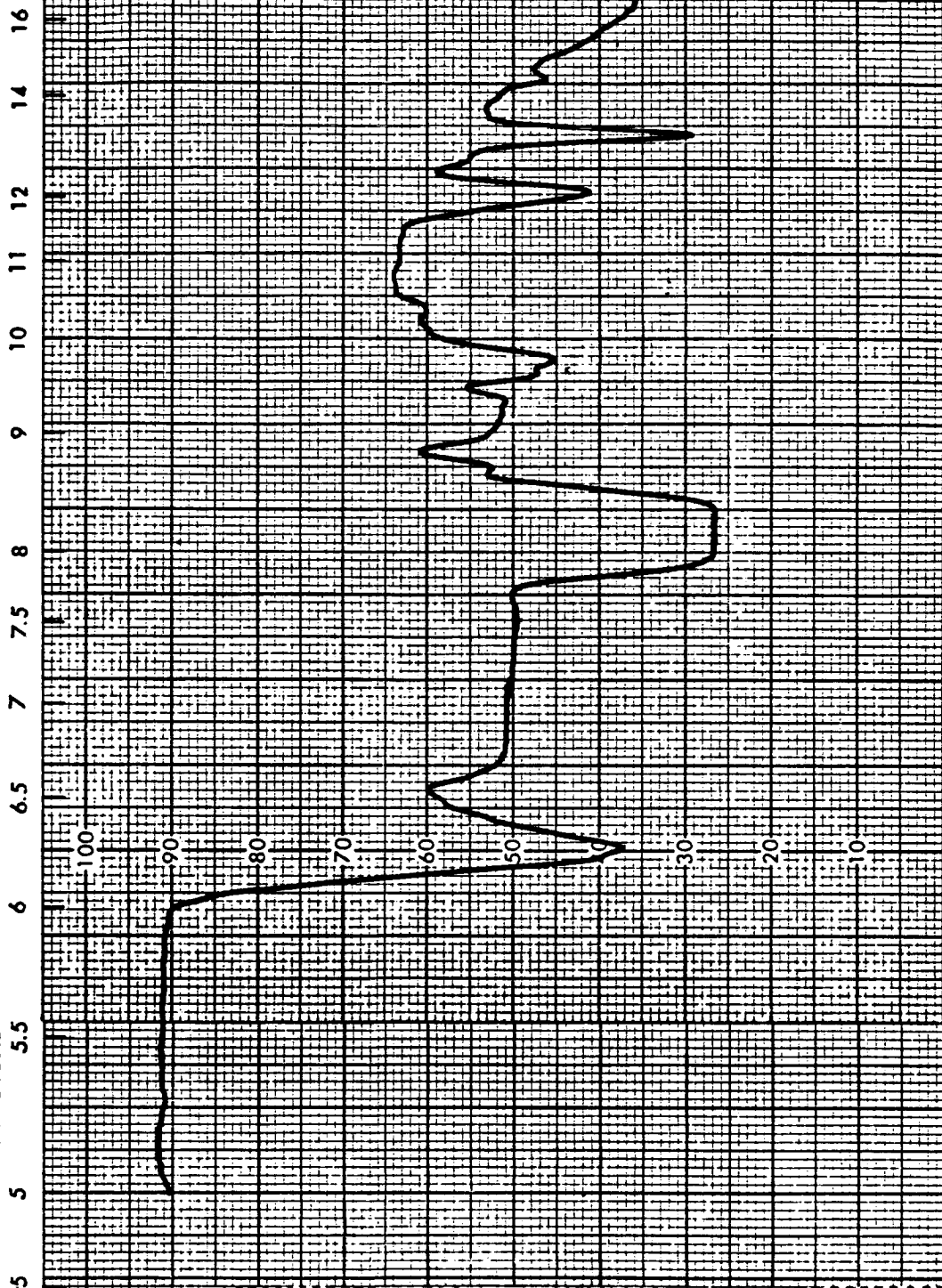
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SPECTROPHOTOMETER

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OF POOR QUALITY

WAVELENGTH IN MICRONS



SPECTRUM NO. 15231

DATE 7-09-86

SAMPLE FM 5055 B

D09256 # 5T-4

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 50-50%T

PHASE 3

COMMENTS PRE-PREG

MATERIAL

ANALYST V. MIRANDA

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SPECTROPHOTOMETER

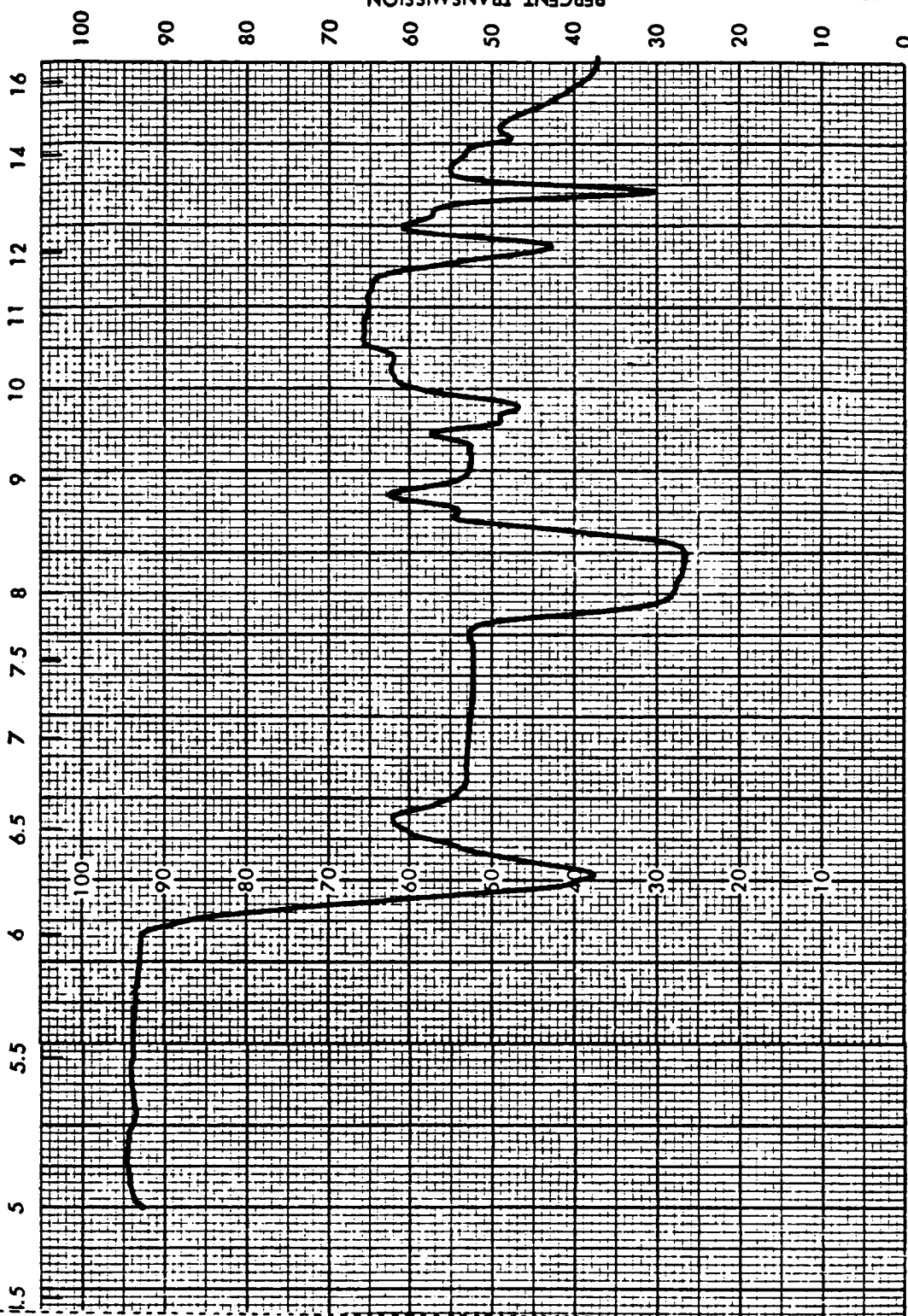
CHART 106

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WAVELENGTH IN MICRONS



WAVENUMBER CM<sup>-1</sup>

SPECTRUM NO. 15232  
DATE 7-09-86  
SAMPLE FM 50550  
D09256 # E-4  
SOURCE \_\_\_\_\_  
STRUCTURE \_\_\_\_\_  
PATH 0.2 mm NaCl  
SOLVENT ACETONE  
CONCENTRATION 30-50%  
PHASE 3  
COMMENTS PAE - PRES  
MATERIAL  
ANALYST X. MIRANDA

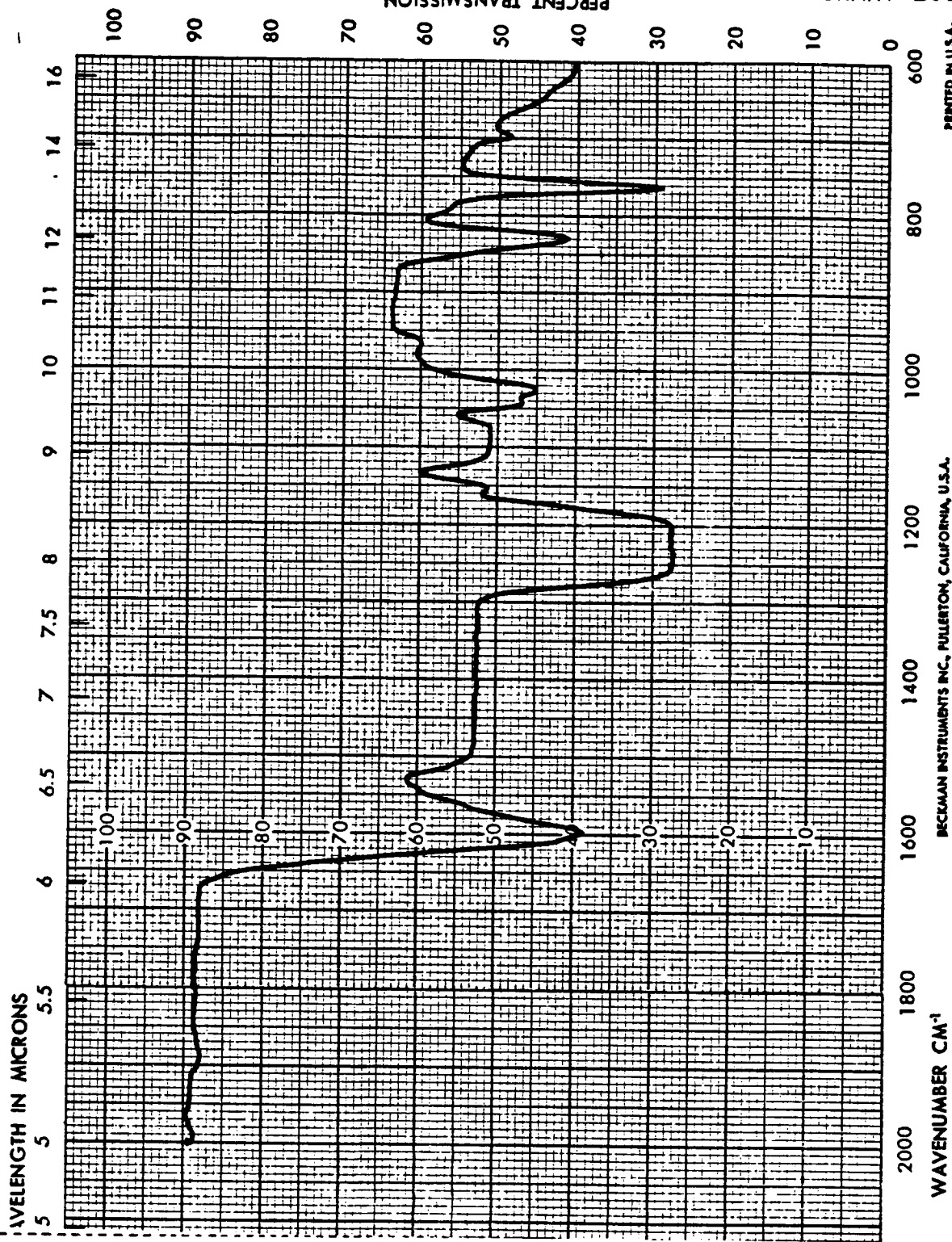
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SPECTROPHOTOMETER

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SPECTRUM NO. 15233  
DATE 7-09-86  
SAMPLE FM 50550  
909256 # 5T-5  
SOURCE \_\_\_\_\_  
STRUCTURE \_\_\_\_\_

PATH 0.2 mm NaCl  
SOLVENT ACETONE  
CONCENTRATION 30-50%  
PHASE 3  
COMMENTS PRE-PREP  
MATERIAL  
ANALYST V. MIRANDA

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SPECTROPHOTOMETER

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WAVENUMBER CM<sup>-1</sup>

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CHART 101

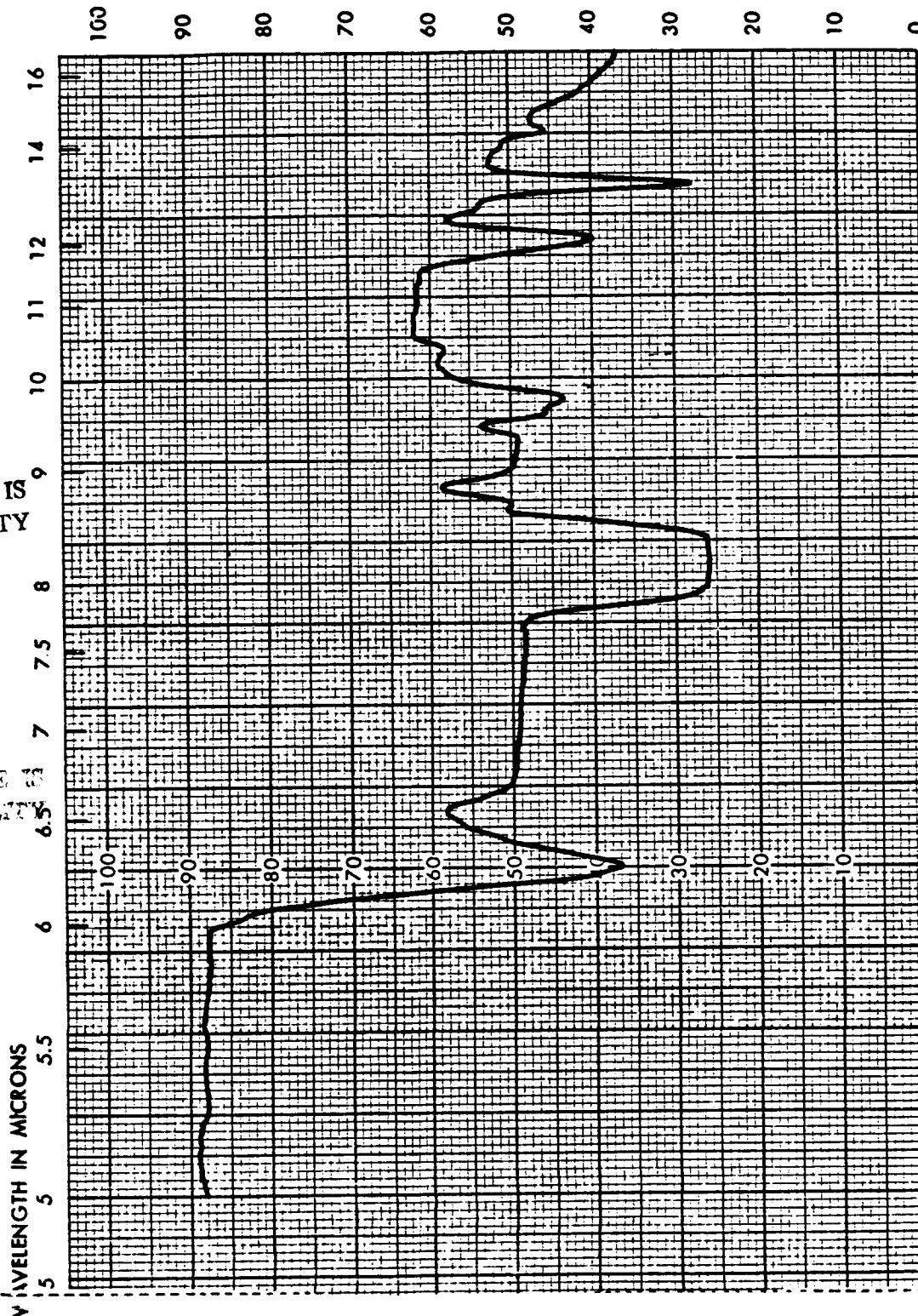
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WAVENUMBER CM<sup>-1</sup>INFRARED  
SPECTROPHOTOMETER**Beckman®**ANALYST V. MIRANDACOMMENTS PRE-PREGMATERIALPHASE 3CONCENTRATION 30-50%TSOLVENT ACETONEPATH 0.2 mm NaCl

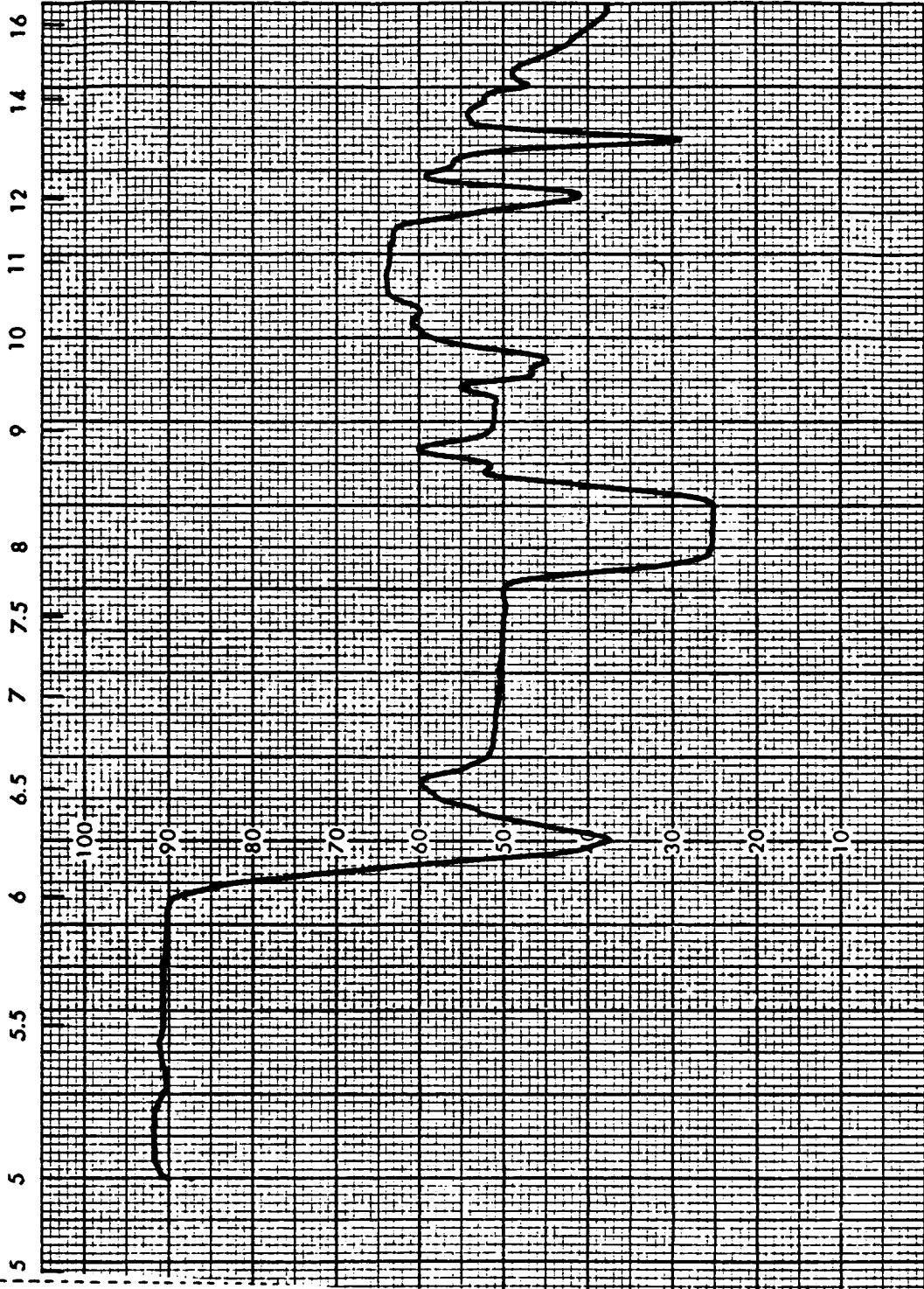
STRUCTURE \_\_\_\_\_

SOURCE \_\_\_\_\_

DO9254 # E-5SAMPLE FM 50550DATE 7-09-86SPECTRUM NO. 15234ORIGINAL PAGE IS  
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OF POOR QUALITY

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OF POOR QUALITY

WAVELENGTH IN MICRONS



SPECTRUM NO. 15235

DATE 7-09-86

SAMPLE FM 50550

DO9256 # 3T-6

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 30-50%

PHASE 3

COMMENTS PRE-PREG

MATERIAL

ANALYST V. MIRANDA

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SPECTROPHOTOMETER

CHART 10K

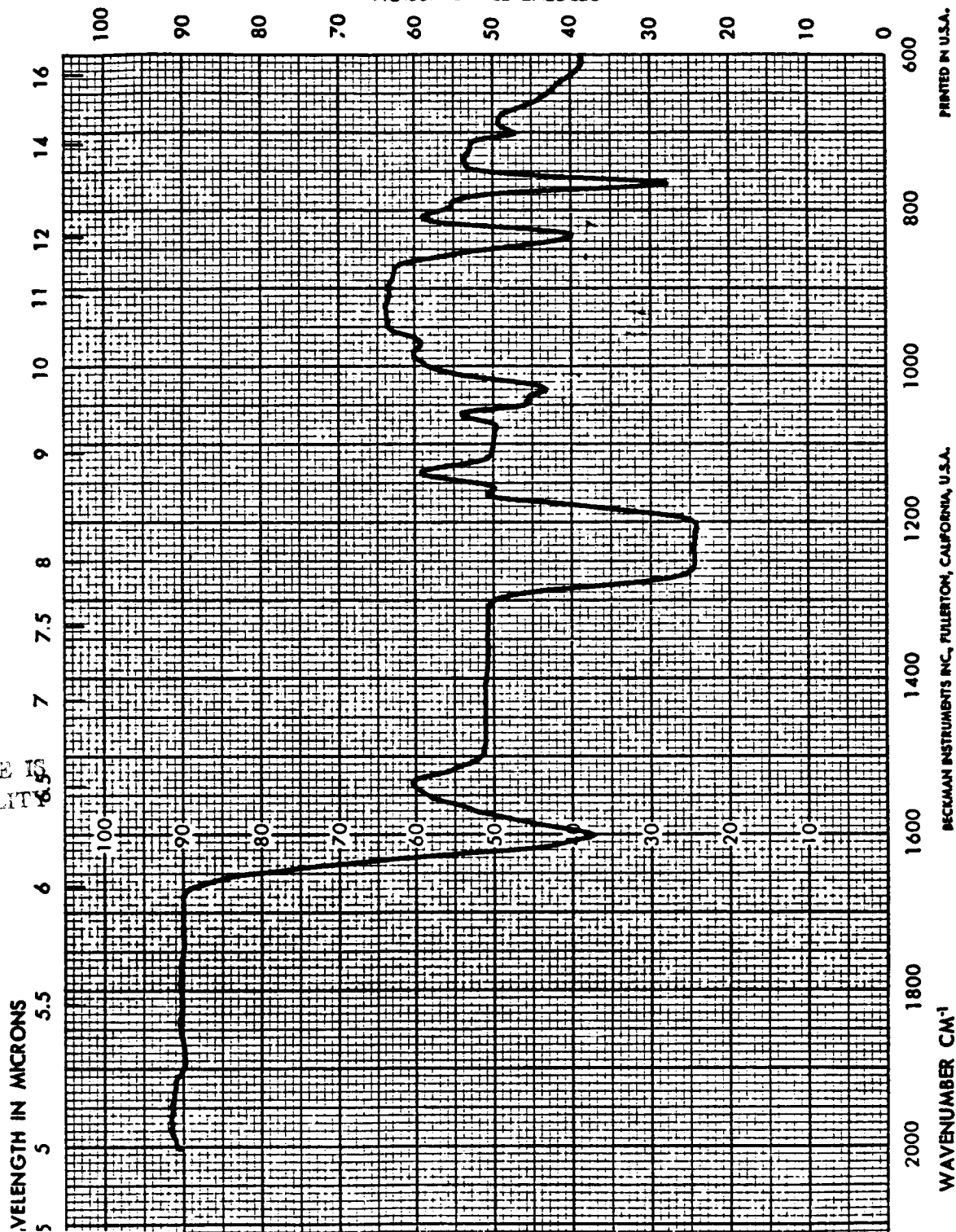
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WAVENUMBER CM<sup>-1</sup>

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SPECTRUM NO. 15234

DATE 7-09-84

SAMPLE FM 50550

DD9256 # E-6

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NaCl

SOLVENT ACETONE

CONCENTRATION 30-50%

PHASE 3

COMMENTS PRE-PREP

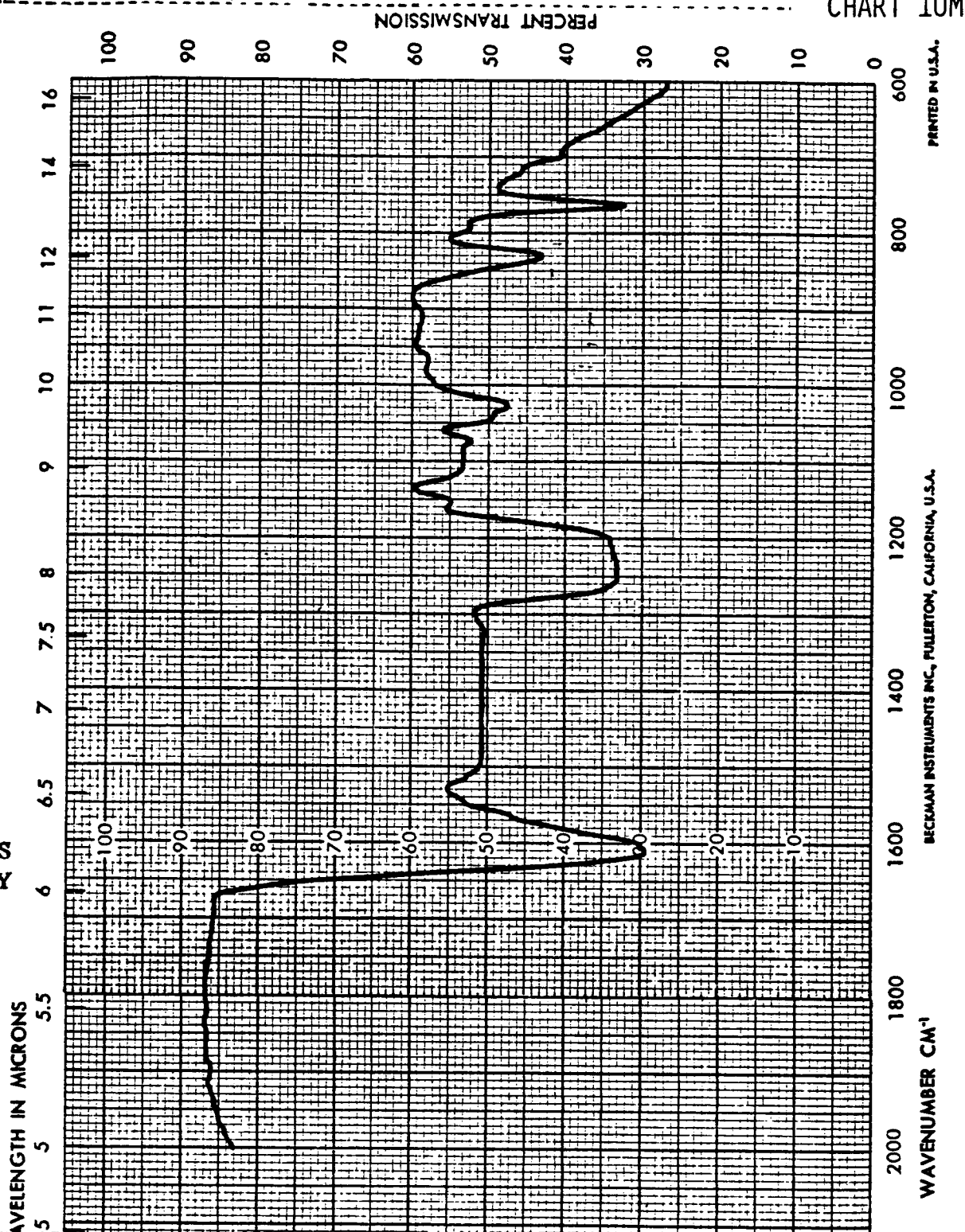
MATERIAL

ANALYST N. MIRANDA

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SPECTROPHOTOMETER

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SPECTRUM NO. 15237  
DATE 7-09-86  
SAMPLE FM 5055B  
DO9256 # 5T-7  
SOURCE \_\_\_\_\_  
STRUCTURE \_\_\_\_\_

PATH 0.2 mm NaCl  
SOLVENT ACETONE  
CONCENTRATION 30-50%  
PHASE 3  
COMMENTS PRE-PREG  
MATERIAL \_\_\_\_\_

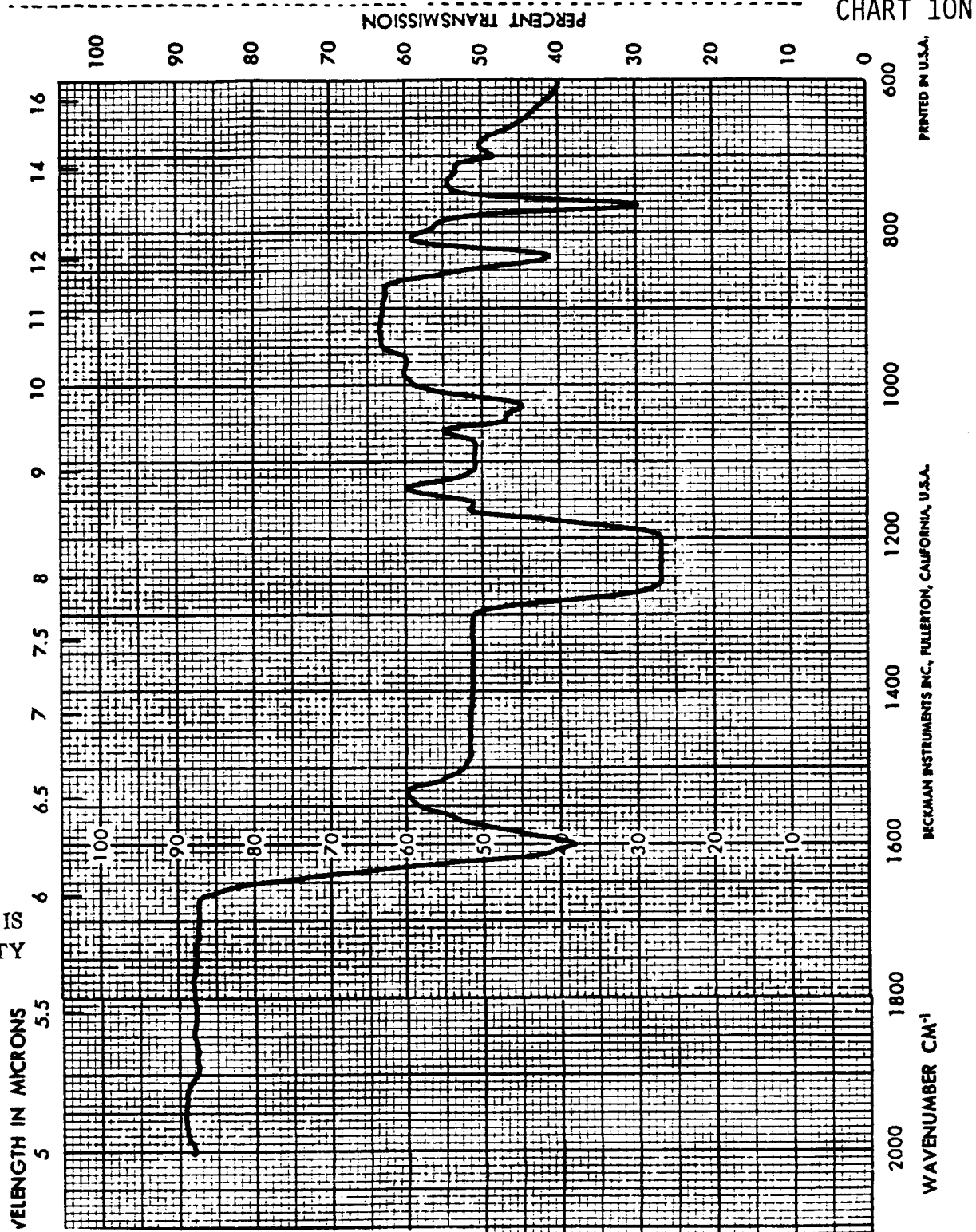
ANALYST Y. MIRANDA

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SPECTROPHOTOMETER



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SPECTRUM NO. 15230

DATE 7-09-86

SAMPLE FM 5055B

DD9256 # E.7

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NaCl

SOLVENT ACETONE

CONCENTRATION 30-50%

PHASE S

COMMENTS PRE-PREG

MATERIAL

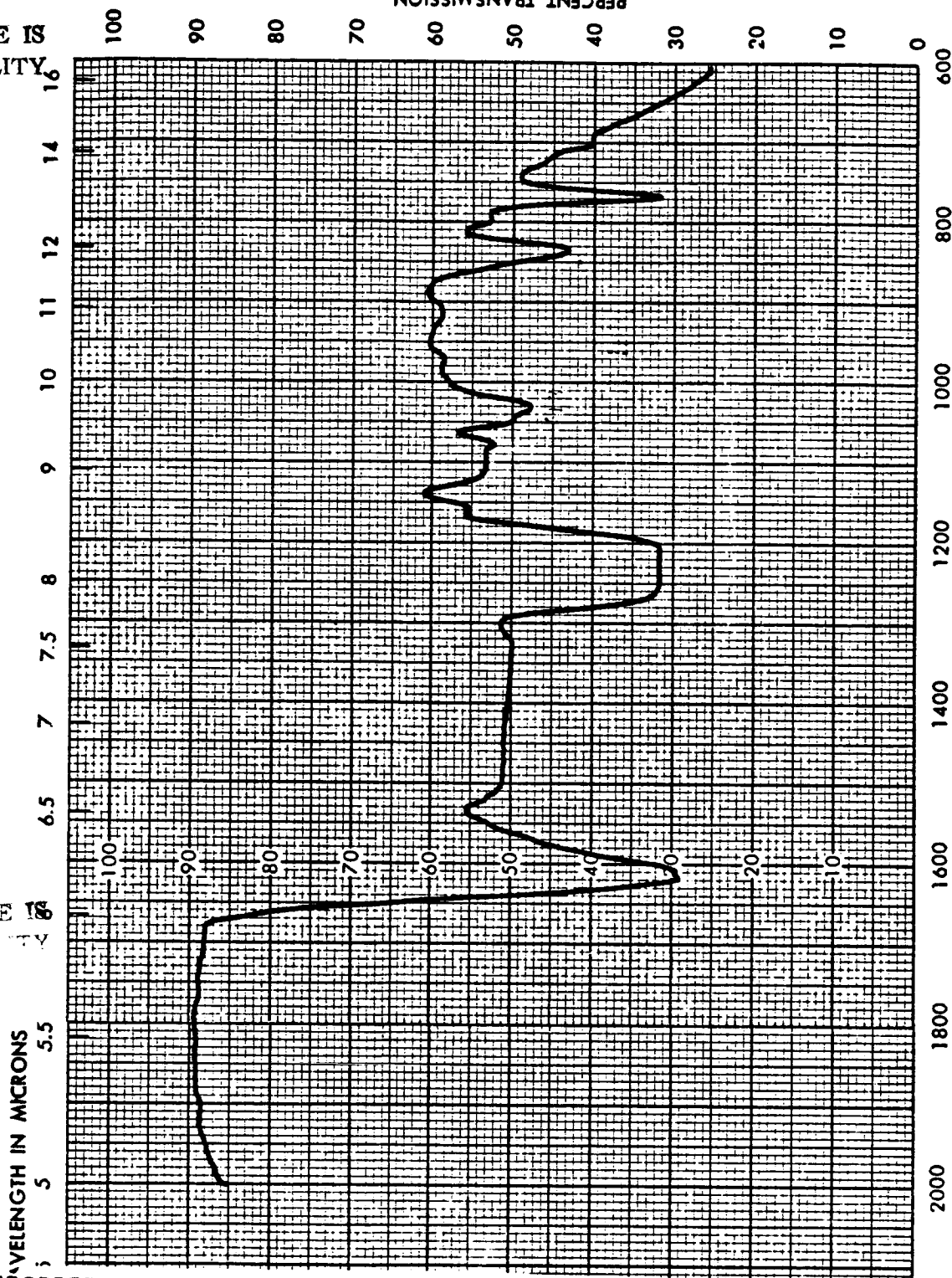
ANALYST J. MIRANDA

Beckman®

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SPECTROPHOTOMETER

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OF POOR QUALITY

ORIGINAL PAGE IS  
OF POOR QUALITY



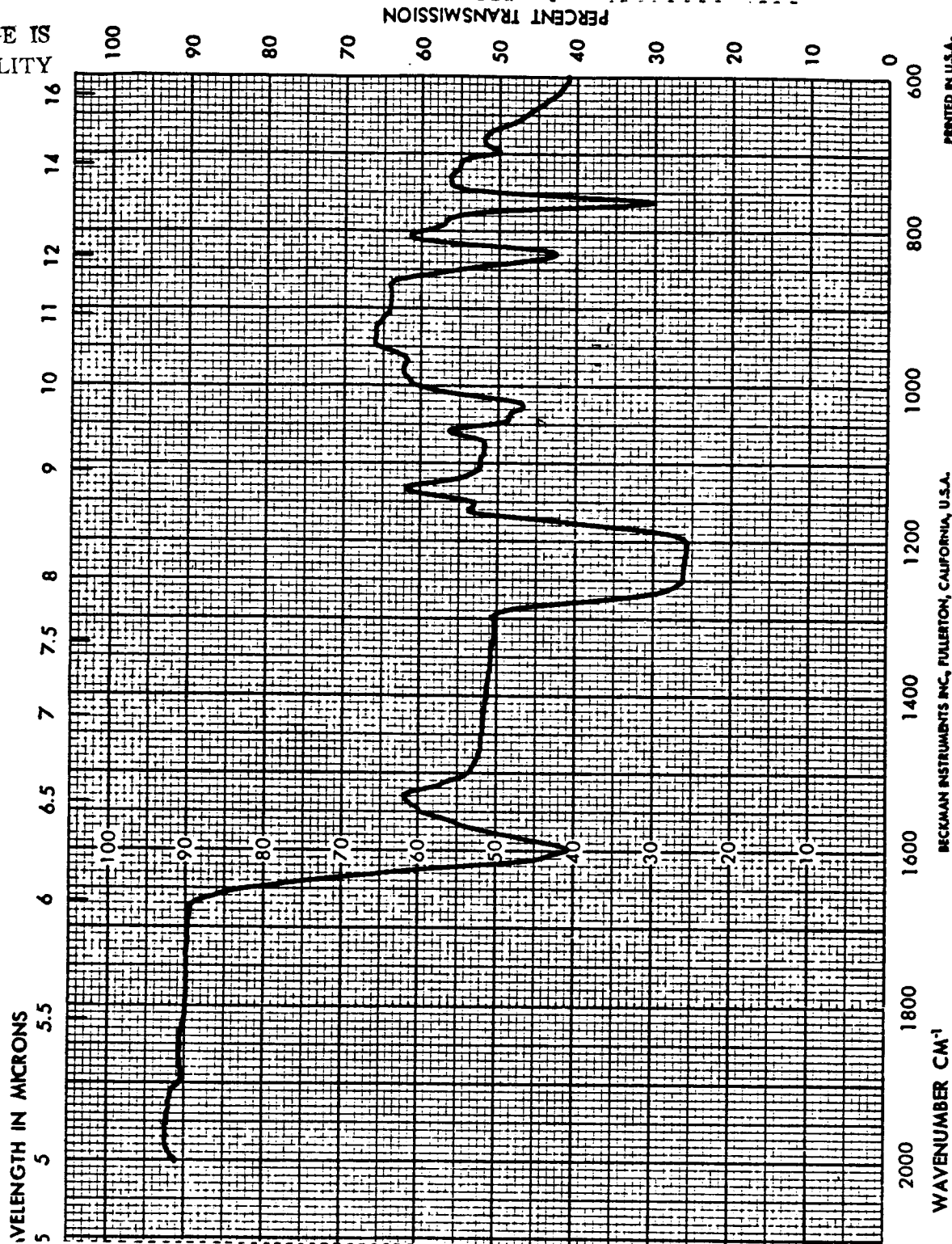
SPECTRUM NO. 15239  
 DATE 7-09-84  
 SAMPLE FM 5055 D  
DO9256 # 5T-B  
 SOURCE \_\_\_\_\_  
 STRUCTURE \_\_\_\_\_  
 PATH 0.2 mm ALCL  
 SOLVENT ACETONE  
 CONCENTRATION 30-50%T  
 PHASE 2  
 COMMENTS PRE-PREG  
MATERIAL  
 ANALYST Y. MIRANDA

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SPECTROPHOTOMETER

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CHART 10P



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SPECTRUM NO. 15240

DATE 7-09-86

SAMPLE FM 5055B

DO9256 # E-8

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 30-50%

PHASE 3

COMMENTS PRE - PRES

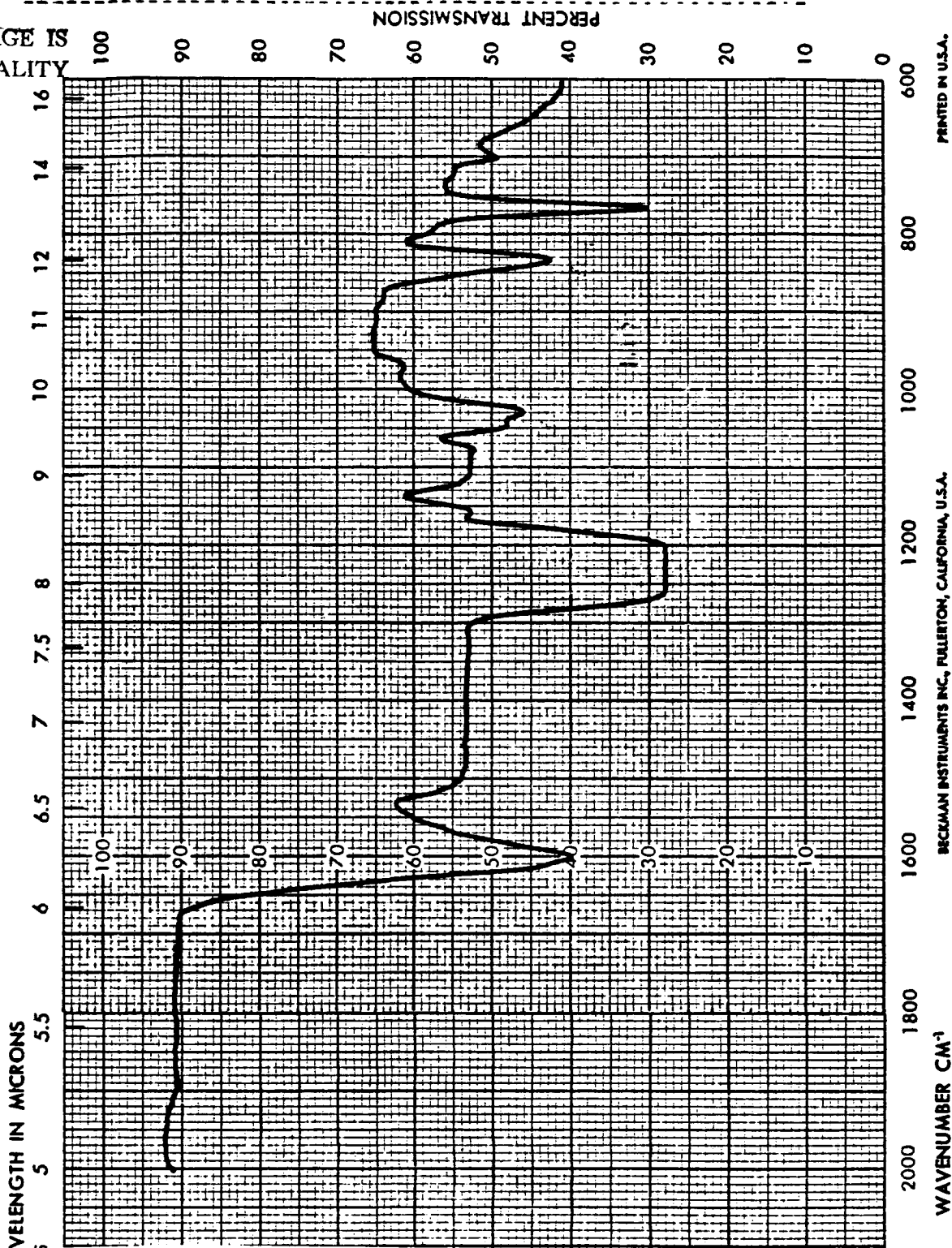
MATERIAL

ANALYST V. MIRANDA

**Beckman®**

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SPECTROPHOTOMETER

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BECKMAN INSTRUMENTS INC., FULLERTON, CALIFORNIA, U.S.A.

WAVENUMBER CM⁻¹

PRINTED IN U.S.A.

SPECTRUM NO. 15241  
DATE 7-09-86  
SAMPLE FM 5055 B  
009254 # 5T-9

SOURCE \_\_\_\_\_  
STRUCTURE \_\_\_\_\_

PATH 0.2 mm NACK  
SOLVENT ACETONE  
CONCENTRATION 30-50%  
PHASE 3  
COMMENTS PRE-PREG  
MATERIAL

ANALYST V. MIRANDA



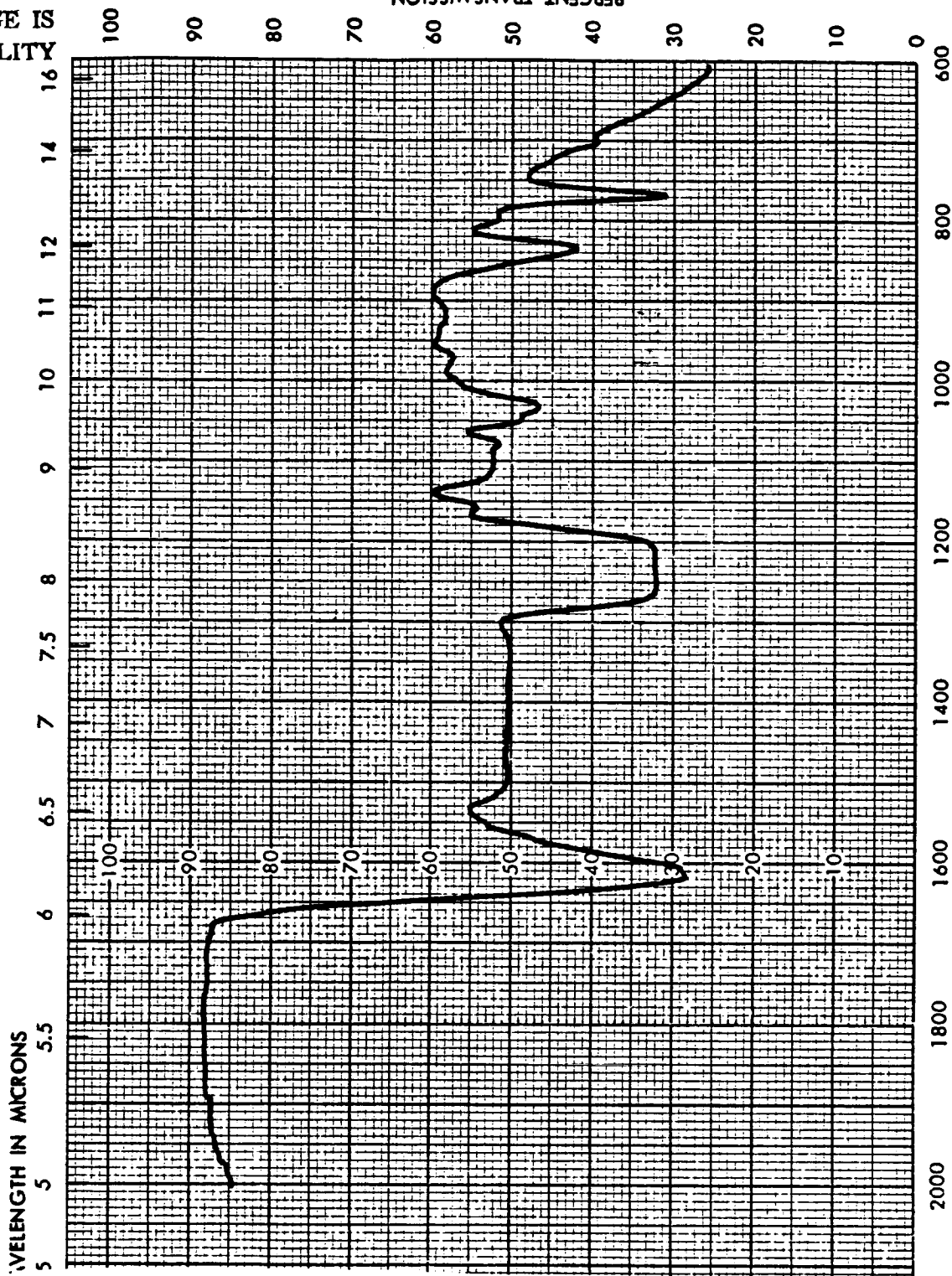
INFRARED  
SPECTROPHOTOMETER

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PERCENT TRANSMISSION

CHART 10R

PRINTED IN U.S.A.



BECKMAN INSTRUMENTS INC., FULLERTON, CALIFORNIA, U.S.A.

WAVENUMBER CM<sup>-1</sup>

SPECTRUM NO. 15212

DATE 7-09-86

SAMPLE FM 5055 D

DO9256 # E-9

SOURCE \_\_\_\_\_

STRUCTURE \_\_\_\_\_

PATH 0.2 mm NaCl

SOLVENT ACETONE

CONCENTRATION 30-50 %

PHASE 3

COMMENTS PRE-PREG

MATERIAL

ANALYST V. MIRANDA

**Beckman®**

INFRARED  
SPECTROPHOTOMETER

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PART NO. 990088

RUN NO. <u>10/14/86</u> OPERATOR <u>TD</u> SAMPLE: <u>D09256-1-5met-6)</u> ATM. <u>24</u> @ <u>570</u> FLOW RATE <u>3.5 L/min</u>	T-AXIS SCALE, °C/in. <u>50</u> 20 PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in. (mcal/sec)/in WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min) /in	TMA (um/in F) SCALE, mile/in <u>0.1/0.2</u> MODE <u>EXHAUST</u> SAMPLE SIZE <u>0.25</u> LOAD, g <u>10</u> dY, (10X), (mile/min) /in
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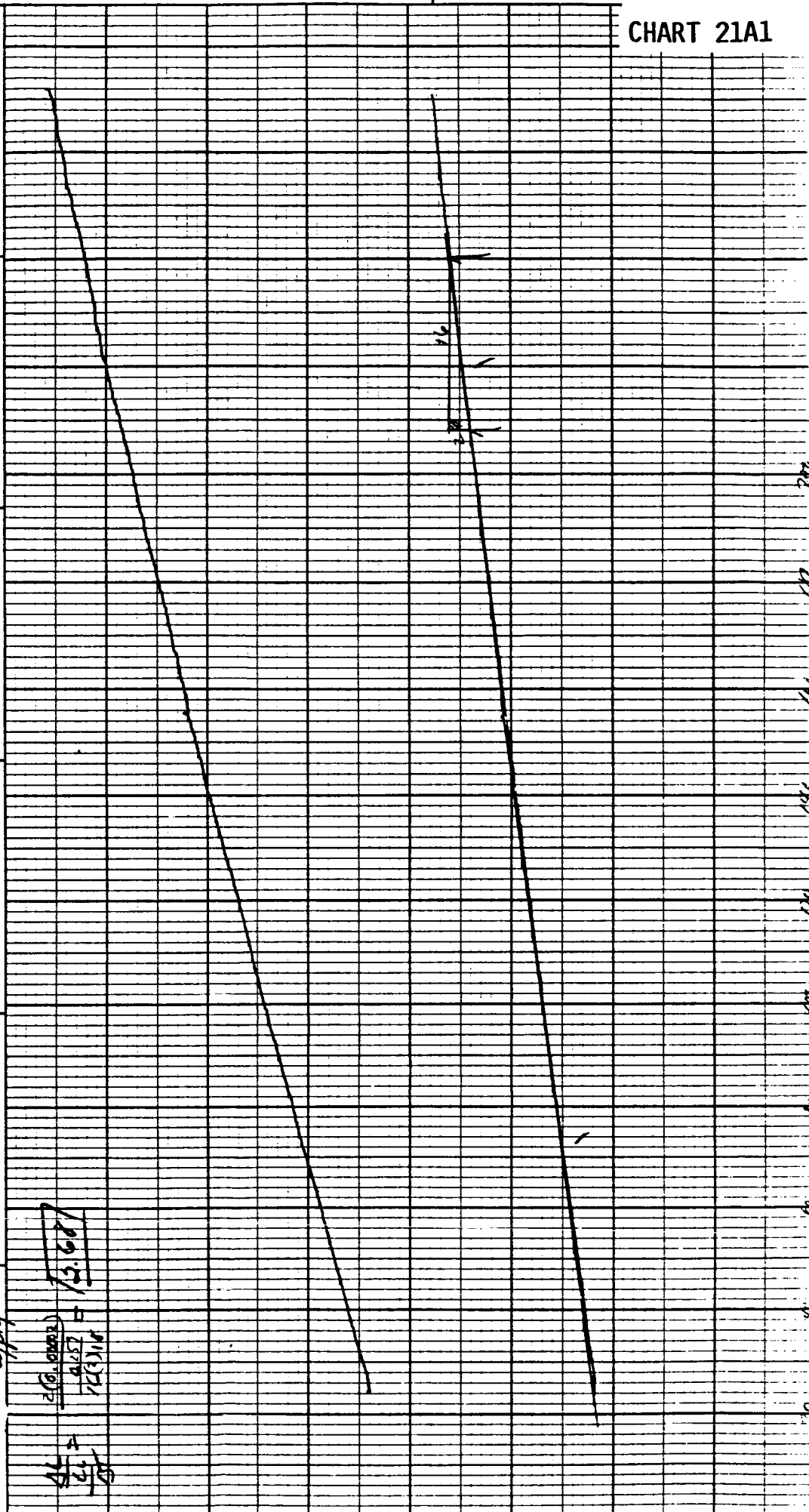


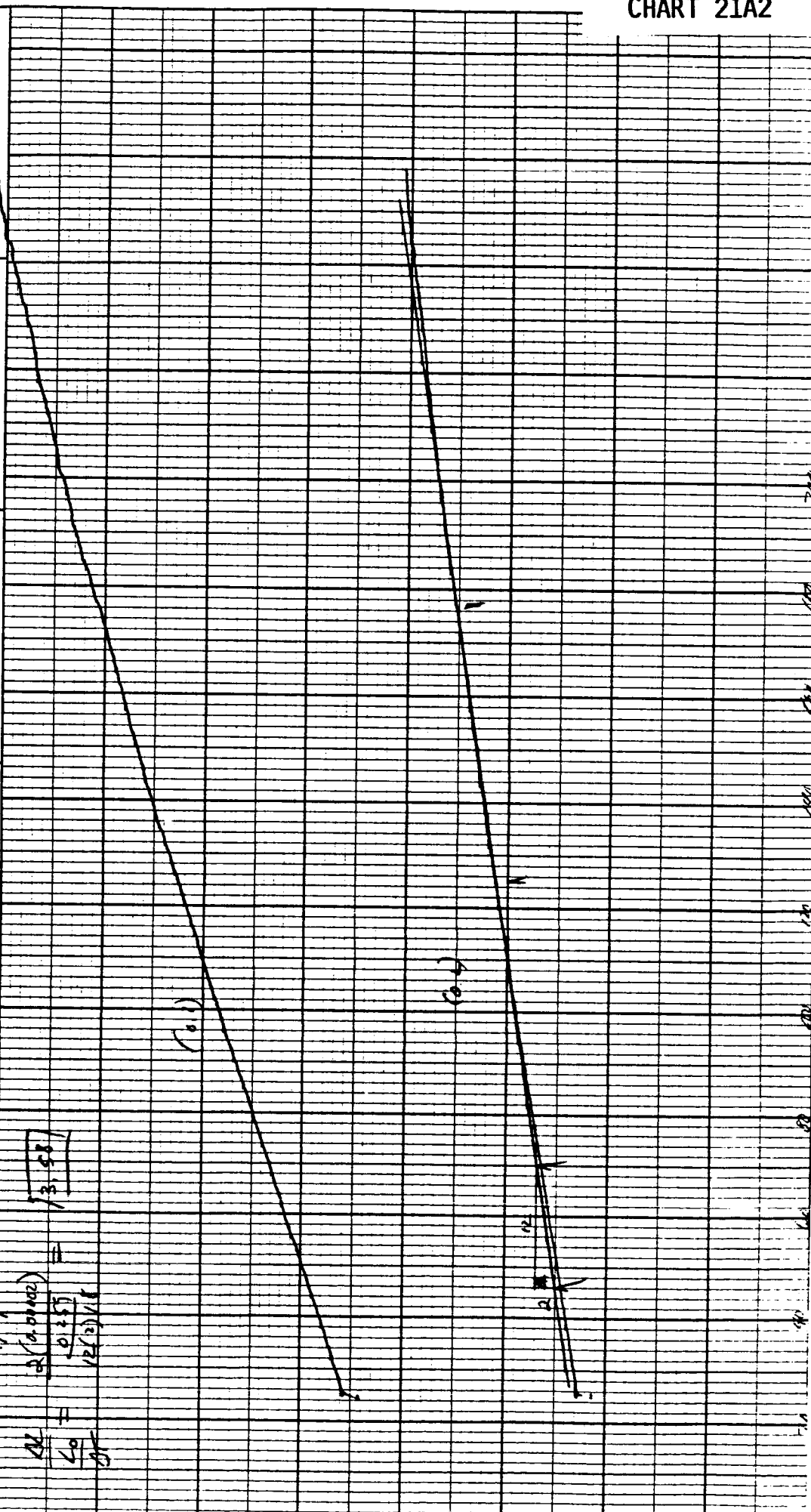
CHART 21A1



ORIGINAL PAGE IS  
OF POOR QUALITY

PART NO. 990088

RUN NO. _____ DATE <u>10/14/86</u> OPERATOR <u>DP</u> SAMPLE: <u>DO 9556-1-5mer (2)</u> <u>ATM 24</u> @ <u>50</u> FLOW RATE <u>3.55 (4)</u>	<b>T-AXIS</b> SCALE, °C/in. <u>50/20</u> PROG. RATE, °C/min <u>10</u> HEAT <input checked="" type="checkbox"/> COOL <input type="checkbox"/> ISO <input type="checkbox"/> SHIFT, in. <u>0</u>	<b>DTA-DSC</b> SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	<b>TGA</b> SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	<b>TMA</b> <u>50 in./in. (°F)</u> SCALE, mils/in. <u>0.01/0.2</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.251</u> LOAD, g <u>11</u> dY, (10X), (mils/min)/in. _____
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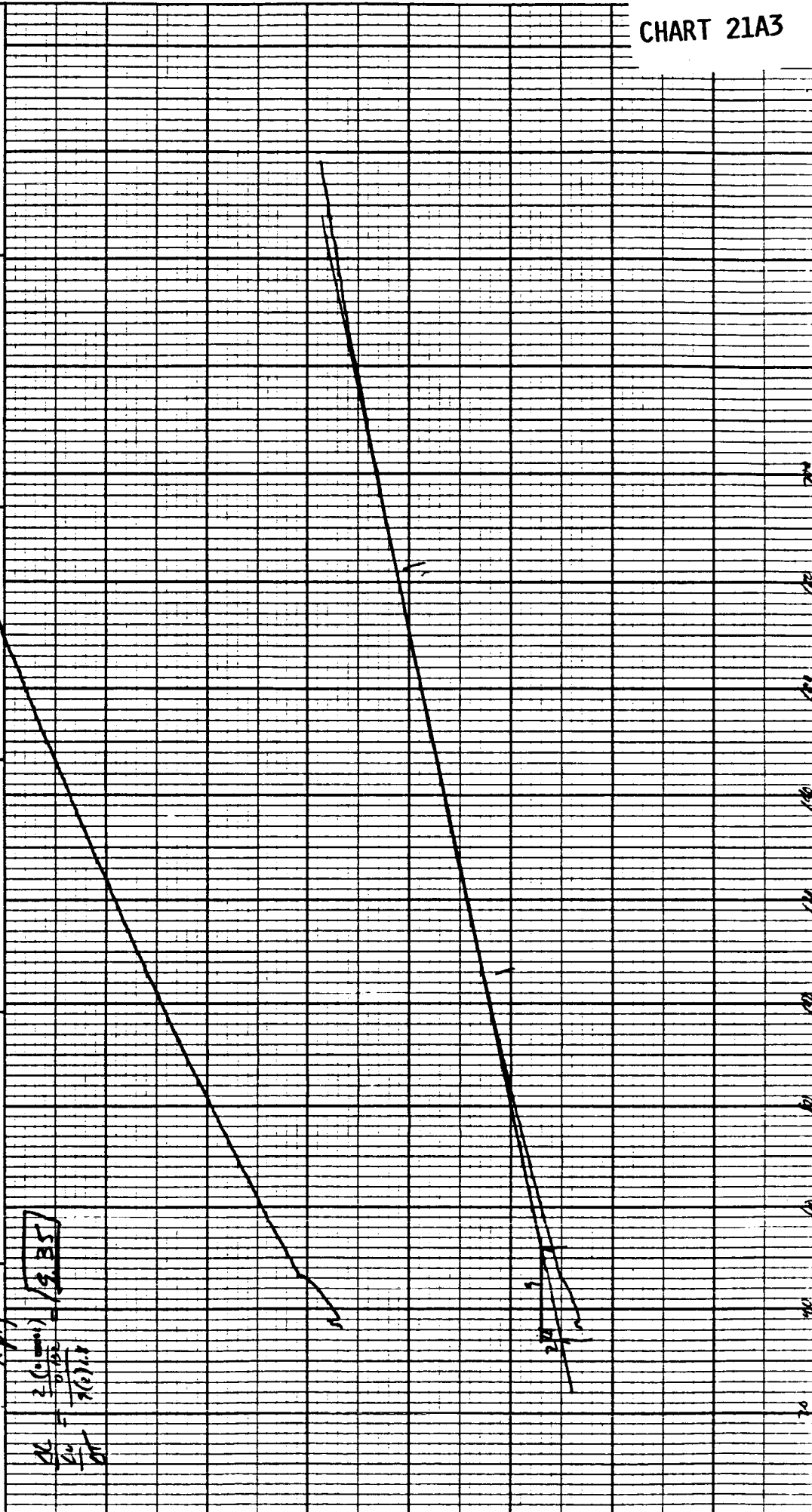


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CHART 21A3

PART NO. 990088

RUN NO. _____ DATE <u>11/14/84</u> OPERATOR <u>DL</u> SAMPLE: <u>D09250-1-SMAF-(3)</u> ATM <u>ALL</u> @ <u>500</u> FLOW RATE <u>3-5.5 cc/min</u>	T-AXIS SCALE, °C/in. <u>50</u> mm PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA (μin/in) _____ SCALE, mils/in. <u>0.162</u> MODE <u>EXTRUSION</u> SAMPLE SIZE <u>0.132</u> LOAD, g <u>11</u> dY, (10X), (mils/min)/in. _____
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PART NO. 990088

RUN NO. <u>144/10</u> OPERATOR <u>PT</u> SAMPLE <u>Dx 2L 56 - 1-3 mcr - (1)</u> ATM <u>2K</u> @ <u>50</u> FLOW RATE <u>3-53 (4)</u>	T-AXIS SCALE, °C/in. <u>50</u> 2° PROG. RATE, °C/min <u>10</u> HEAT / COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min) /in	TMA (in/in/F) SCALE, mils/in <u>0.1/0.2</u> MODE <u>Ext. 2000</u> SAMPLE SIZE <u>0.132</u> LOAD, g <u>12</u> dY, (10X) (mils/min) /in
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PART NO. 990038

RUN NO. <u>11176</u> OPERATOR <u>TD</u> SAMPLE <u>DOG 256 - 1 - FWD - (1)</u> ATM. <u>194</u> @ <u>STP</u> FLOW RATE <u>3-53 GPH</u>	<u>T-AXIS</u> SCALE, °C/in. <u>50</u> <sup>20</sup> PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>   </u> ISO <u>   </u> SHIFT, in. <u>0</u>	<u>DTA-DSC</u> SCALE, °C/in. <u>   </u> (mcal/sec)/in. <u>   </u> WEIGHT, mg <u>   </u> REFERENCE <u>   </u>	<u>TGA</u> SCALE, mg/in. <u>   </u> SUPPRESSION, mg <u>   </u> WEIGHT, mg <u>   </u> TIME CONST., sec <u>   </u> dY, (mg/min)/in. <u>   </u>	<u>TMA</u> <u>(μm/in.°F)</u> SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXHIBITION</u> SAMPLE SIZE <u>0.263</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. <u>   </u>
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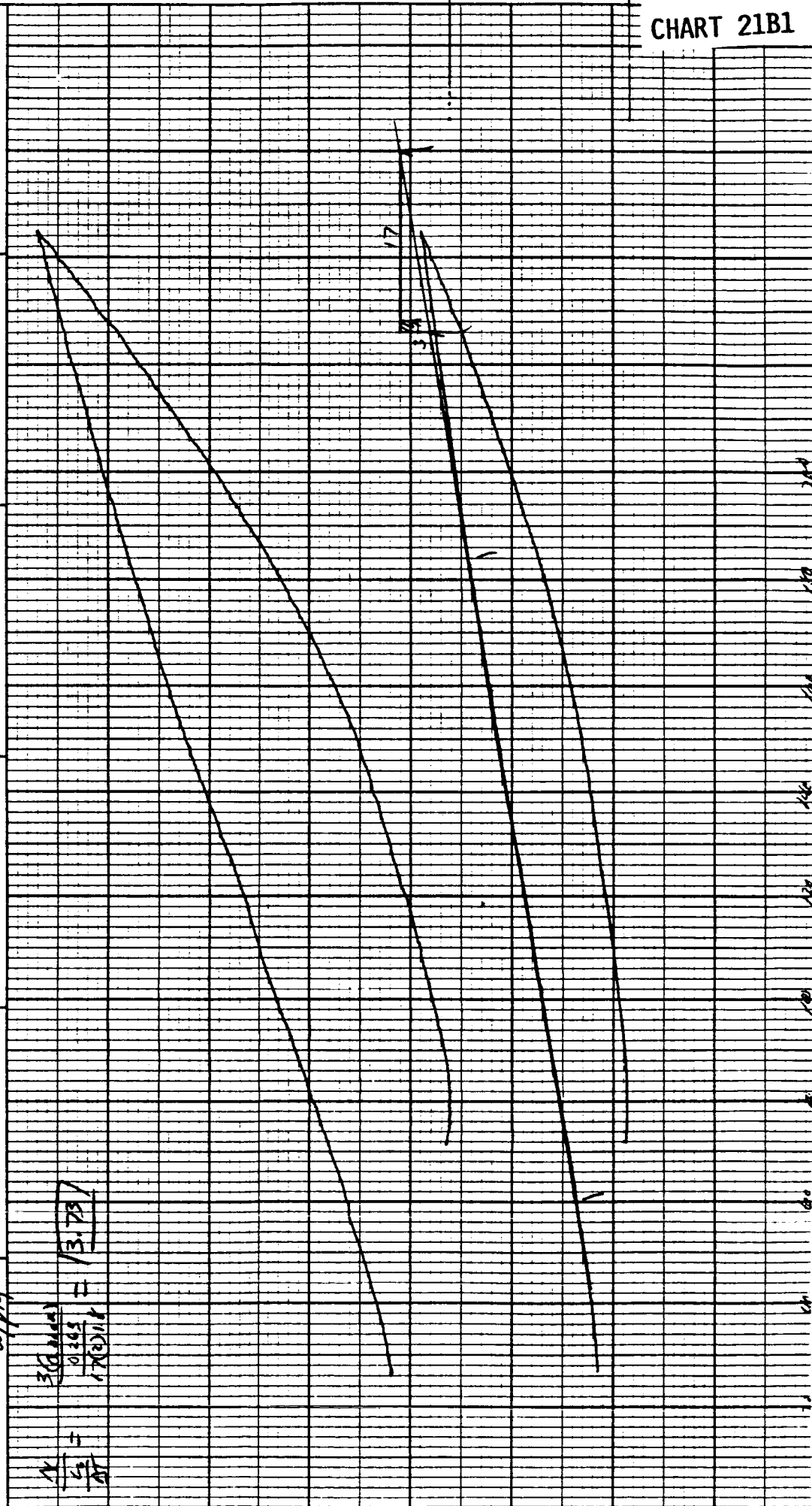


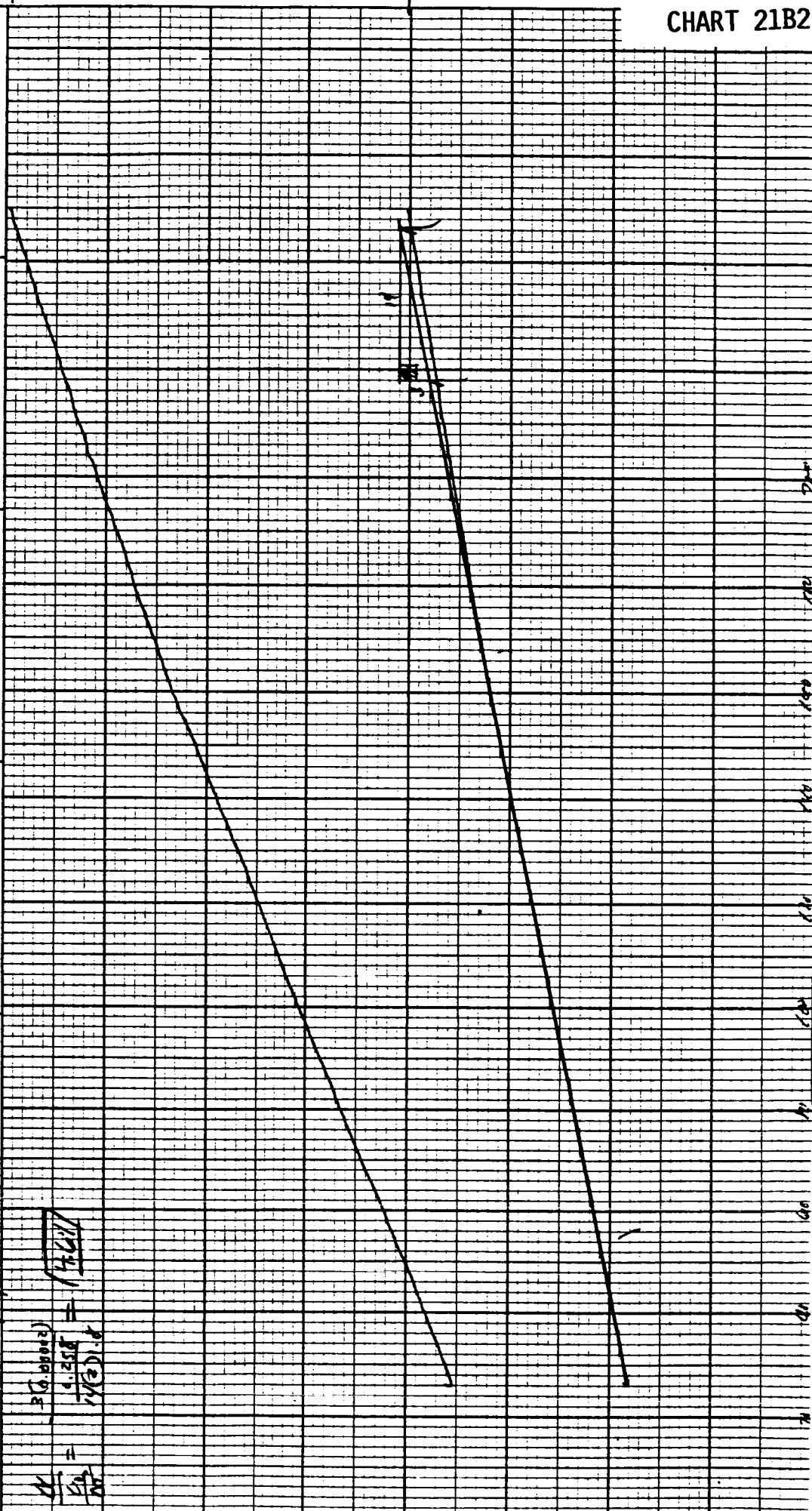
CHART 21B1

ORIGINAL PAGE IS  
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PART NO. 990088

CHART 21B2

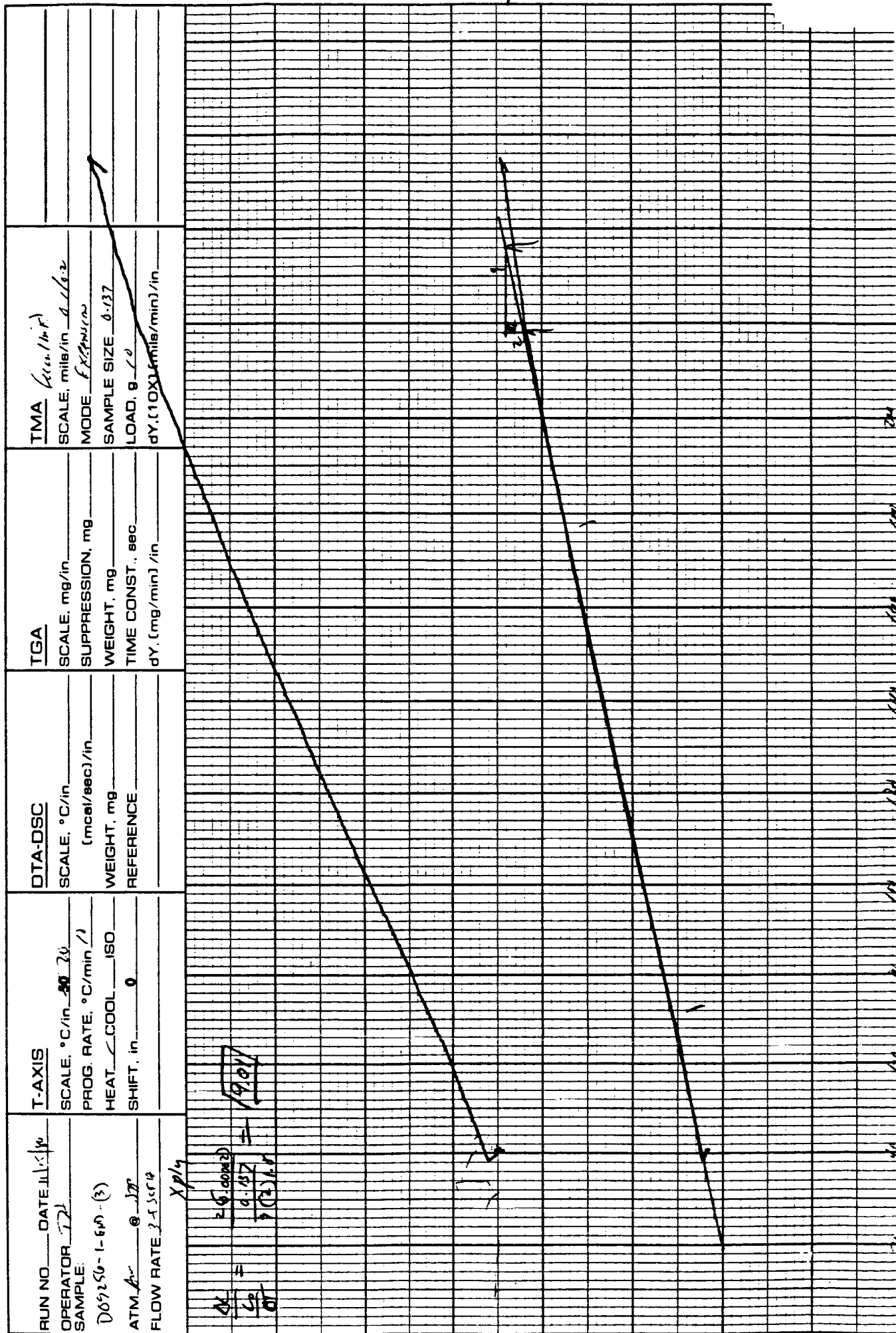
RUN NO. <u>DATE 3/1/74</u> OPERATOR <u>TJ</u> SAMPLE: <u>D0526-1-FW (2)</u> ATM <u>411</u> @ <u>500</u> FLOW RATE <u>3.55 cc/d</u>	T-AXIS SCALE, °C/in. <u>50</u> PROG. RATE, °C/min <u>20</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg <u>REFERENCE</u>	TGA SCALE, mg/in <u>10</u> SUPPRESSION, mg <u>0</u> WEIGHT, mg <u>0</u> TIME CONST., sec <u>0</u> dY, (mg/min)/in <u>0</u>	TMA SCALE, mils/in <u>0.001</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.258</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in <u>0</u>
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PART NO. 990088

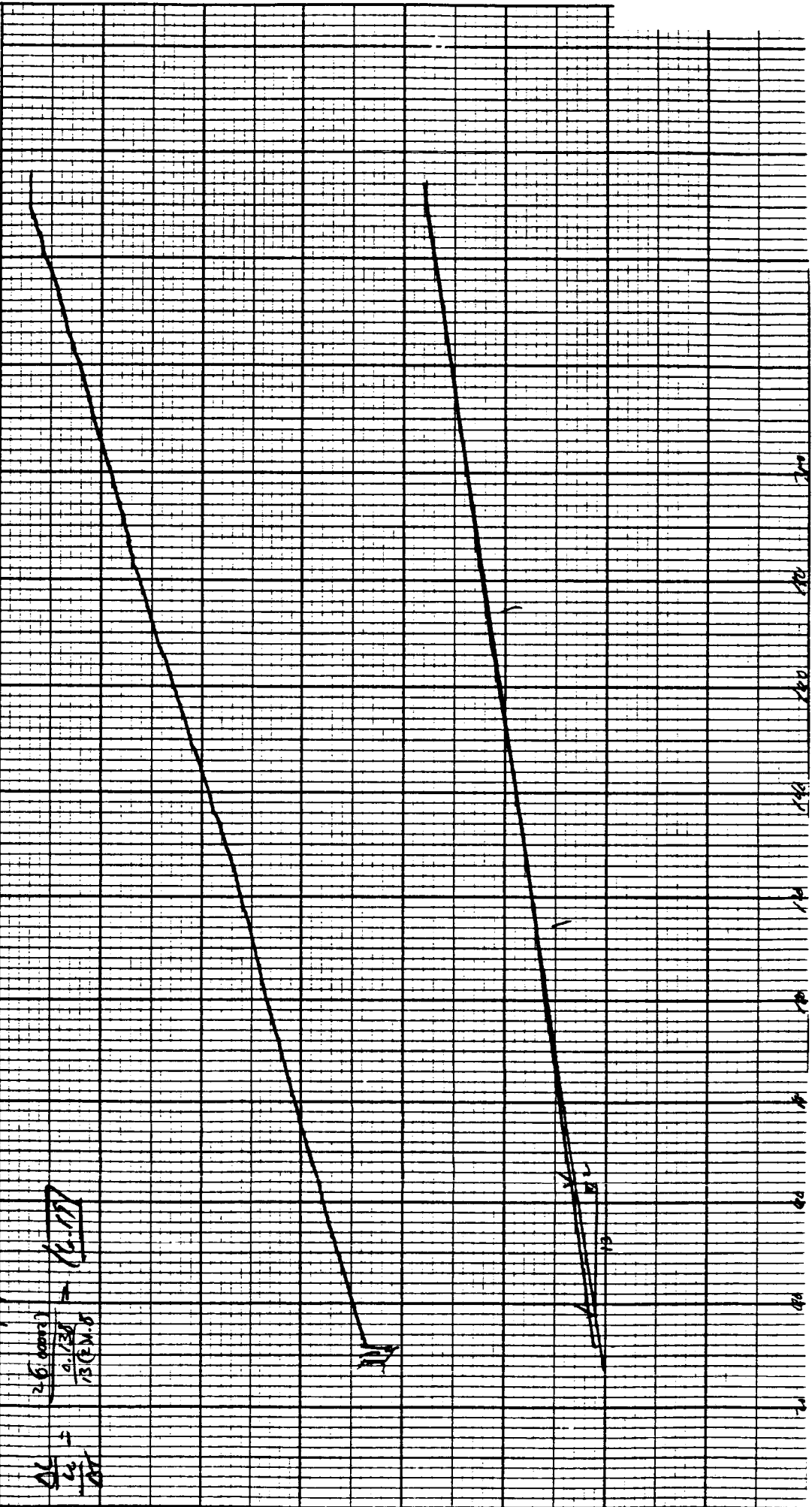
CHART 21B3



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PART NO. 990086

RUN NO. _____	DATE <u>11/1/70</u>	T-AXIS SCALE, °C/in. <u>50</u> <sup>20</sup> <sub>20</sub>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec. _____ dY, (mg/min)/in. _____	TMA <u>Win (in)</u> SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.131</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. _____
OPERATOR <u>DL</u>	PROG. RATE, °C/min <u>10</u>	HEAT <u>COOL</u> ISO	WEIGHT, mg _____ REFERENCE _____		
SAMPLE: <u>D69256-1-12100-(4)</u>	SHIFT, in. <u>0</u>				
ATMOSP. <u>@ JPB</u>					
FLOW RATE <u>3-5 SCFD</u>					



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CHART 21C1

PART NO. 990088

<p>RUN NO. <u>1014/116</u>          OPERATOR <u>TH</u>          SAMPLE: <u>D69256 - 2 - START - (1)</u>          ATM. <u>Ar</u> @ <u>STP</u>          FLOW RATE <u>3.55 L/min</u></p>	<p>T-AXIS          SCALE, °C/in. <u>50/20</u>          PROG. RATE, °C/min <u>10</u>          HEAT <u>COOL</u> ISO          SHIFT, in. <u>0</u></p>	<p>DTA-DSC          SCALE, °C/in. <u>(mcal/sec)/in</u>          WEIGHT, mg          REFERENCE</p>	<p>TGA          SCALE, mg/in          SUPPRESSION, mg          WEIGHT, mg          TIME CONST., sec          dY, (mg/min) /in</p>	<p>TMA (µin/in°F)          SCALE, mils/in <u>0.1/1.1</u>          MODE <u>EXPANSION</u>          SAMPLE SIZE <u>0.260</u>          LOAD, g <u>10</u>          dY, (10X), (mils/min) /in</p>
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Handwritten calculation:

$$\frac{46.20000}{0.260} = 176.92$$

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PART NO. 990088

RUN NO. _____ DATE <u>10/14/86</u> OPERATOR <u>TD</u> SAMPLE: <u>D01256-2-5mer-(2)</u> ATM <u>20</u> @ <u>500</u> FLOW RATE <u>3-5 L/min</u>	T-AXIS SCALE, °C/in. <u>50</u> / <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT / COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min) / in. _____	TMA <u>500</u> (in/in) SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXHIBIT</u> SAMPLE SIZE <u>0.262</u> LOAD, g <u>10</u> dY, (10X), (mils/min) / in. _____
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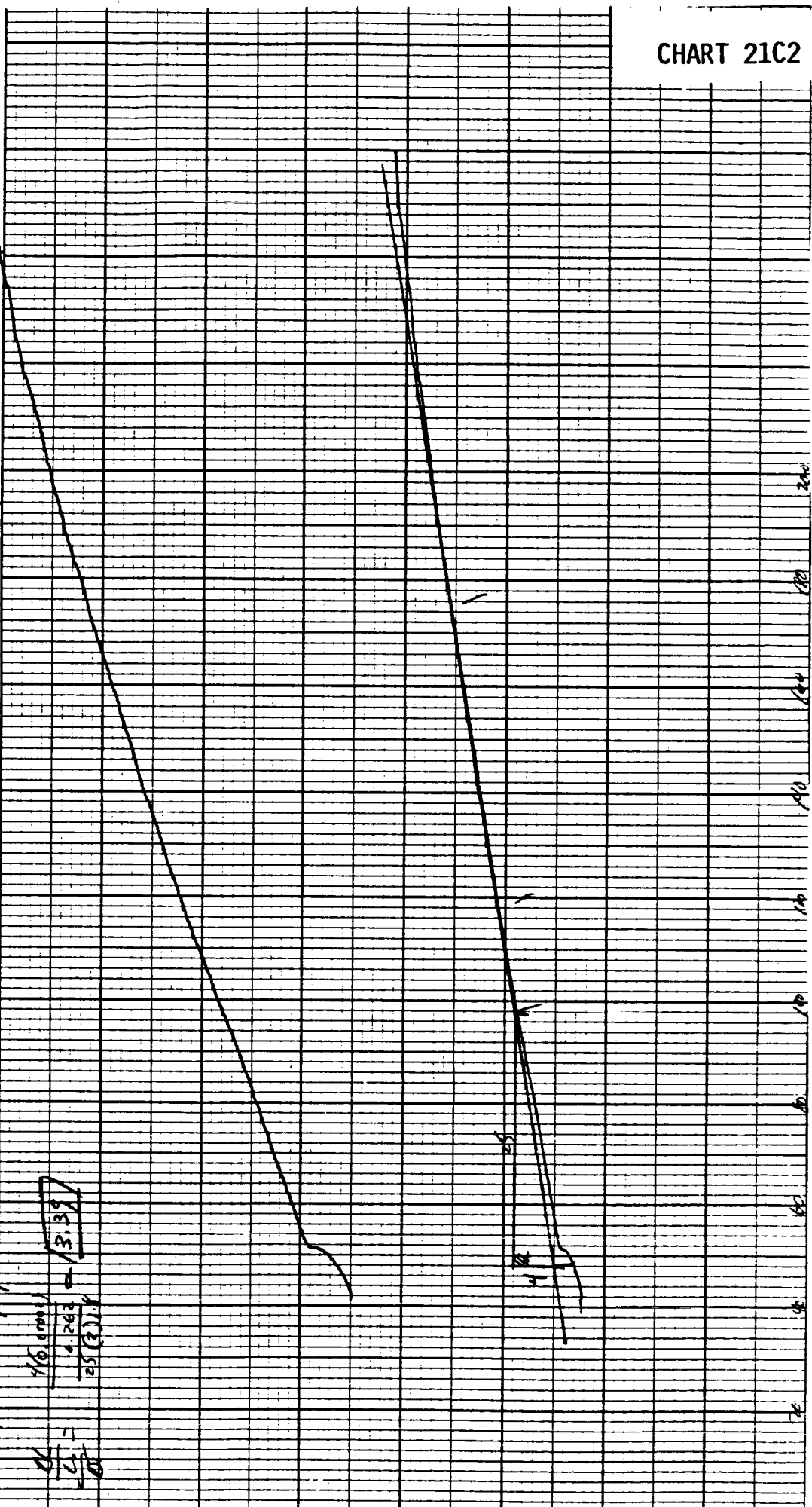


CHART 21C2

**PART NO. 990088**

**CHART 21C3**

Run No. 1014166  
Operator JH  
Sample: D6926-2 - Smart-3  
ATM. Air @ 500  
Flow Rate 2.53 CFH

T-Axis  
Scale, °C/in. 50  
Prog. Rate, °C/min 1  
Heat / Cool ISO  
Shift, in 0

DTA-DSC  
Scale, °C/in. (mcal/sec) / in  
Weight, mg  
Reference

TGA  
Scale, mg/in  
Suppression, mg  
Weight, mg  
Time Const., sec  
dY, (mg/min) / in

TMA (µin/in)  
Scale, mils/in 0.1/6.2  
Mode 1000  
Sample Size 0.132  
Load, g 10  
dY, (10X), (mils/min) / in



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PART NO. 990088

RUN NO. _____ DATE <u>10/1/86</u> OPERATOR <u>DP</u> SAMPLE: <u>D61256 - 2-5mm (4)</u> <u>ATM 24</u> @ <u>508</u> FLOW RATE <u>3-5 L/min</u>	T-AXIS SCALE, °C/in. <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA (µm/in.) SCALE, mils/in. <u>0.162</u> MODE <u>EXAMIN</u> SAMPLE SIZE <u>0.130</u> LOAD, g <u>1</u> dY, (10X), (mils/min)/in. _____	
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$$\frac{dL}{dt} = \frac{3(0.0001)}{0.130} = 19.757$$

$$\frac{dL}{dt} = \frac{12(2) \cdot 0.8}{0.130}$$

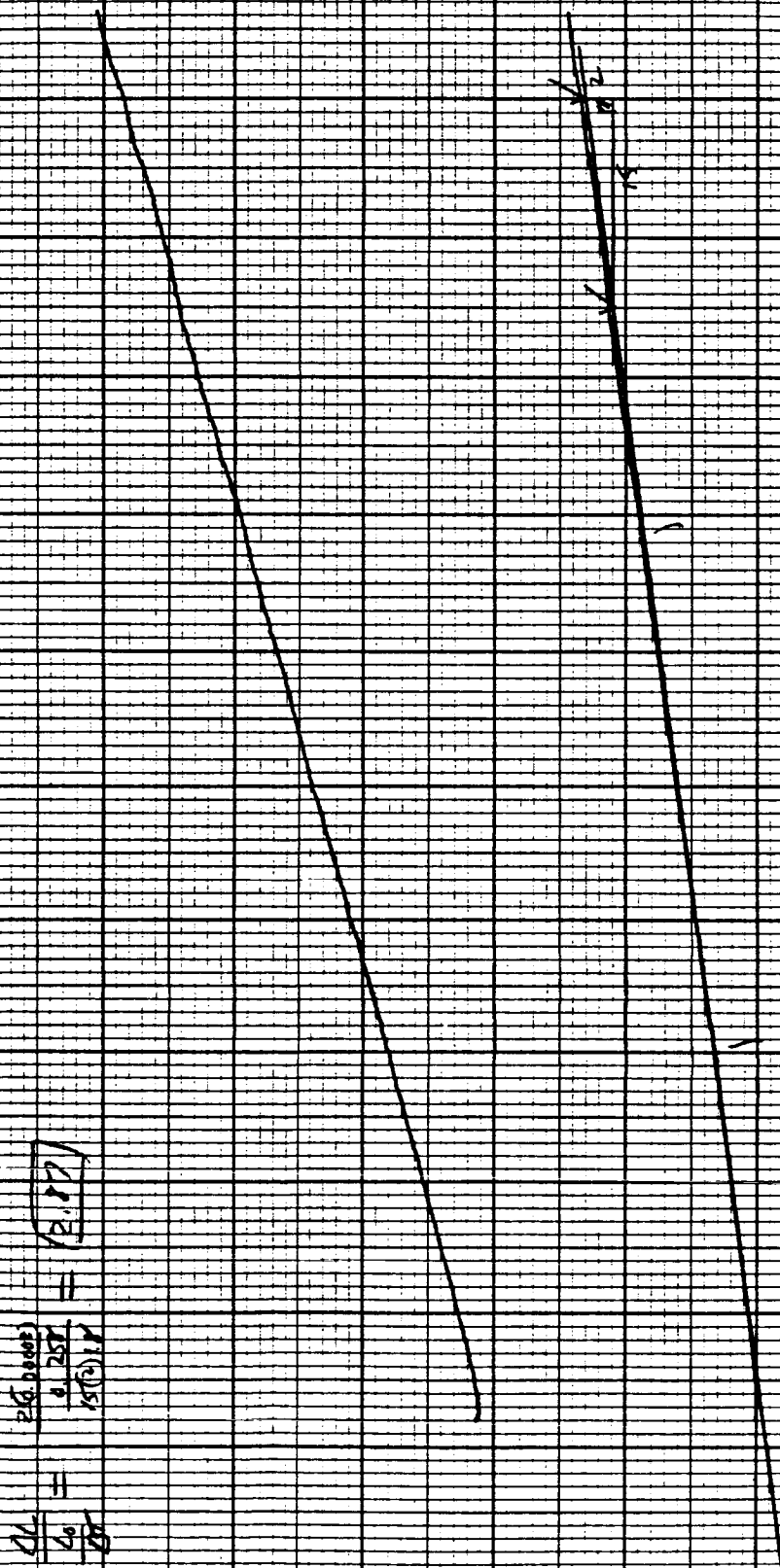
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PART NO. 990088

RUN NO. _____	DATE <u>5/1/88</u>	T-AXIS	DTA-DSC	TGA	TMA
OPERATOR <u>DP</u>	SCALE °C/in. <u>20</u>	SCALE °C/in. _____	SCALE °C/in. _____	SCALE, mg/in. <u>0.1/0.2</u>	SCALE, mg/in. <u>0.1/0.2</u>
SAMPLE: <u>D0256-2-(W)-6</u>	PROG. RATE °C/min <u>10</u>	(mg/sec)/in. _____	SUPPRESSION, mg _____	MODE <u>EXTRUSION</u>	MODE <u>EXTRUSION</u>
	HEAT/COOL <u>ISO</u>	WEIGHT, mg _____	WEIGHT, mg _____	SAMPLE SIZE <u>0.258</u>	SAMPLE SIZE <u>0.258</u>
ATM <u>N<sub>2</sub></u>	SHIFT, in. <u>0</u>	REFERENCE _____	TIME CONST., sec _____	LOAD, g <u>44</u>	LOAD, g <u>44</u>
FLOW RATE <u>3-55 CFID</u>			dY, (mg/min)/in _____	dY, (10X), (mile/min)/in _____	dY, (10X), (mile/min)/in _____

upoly

$$\frac{dL}{d_0} = \frac{26.0000}{0.258} = 100.775$$



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CHART 21D2

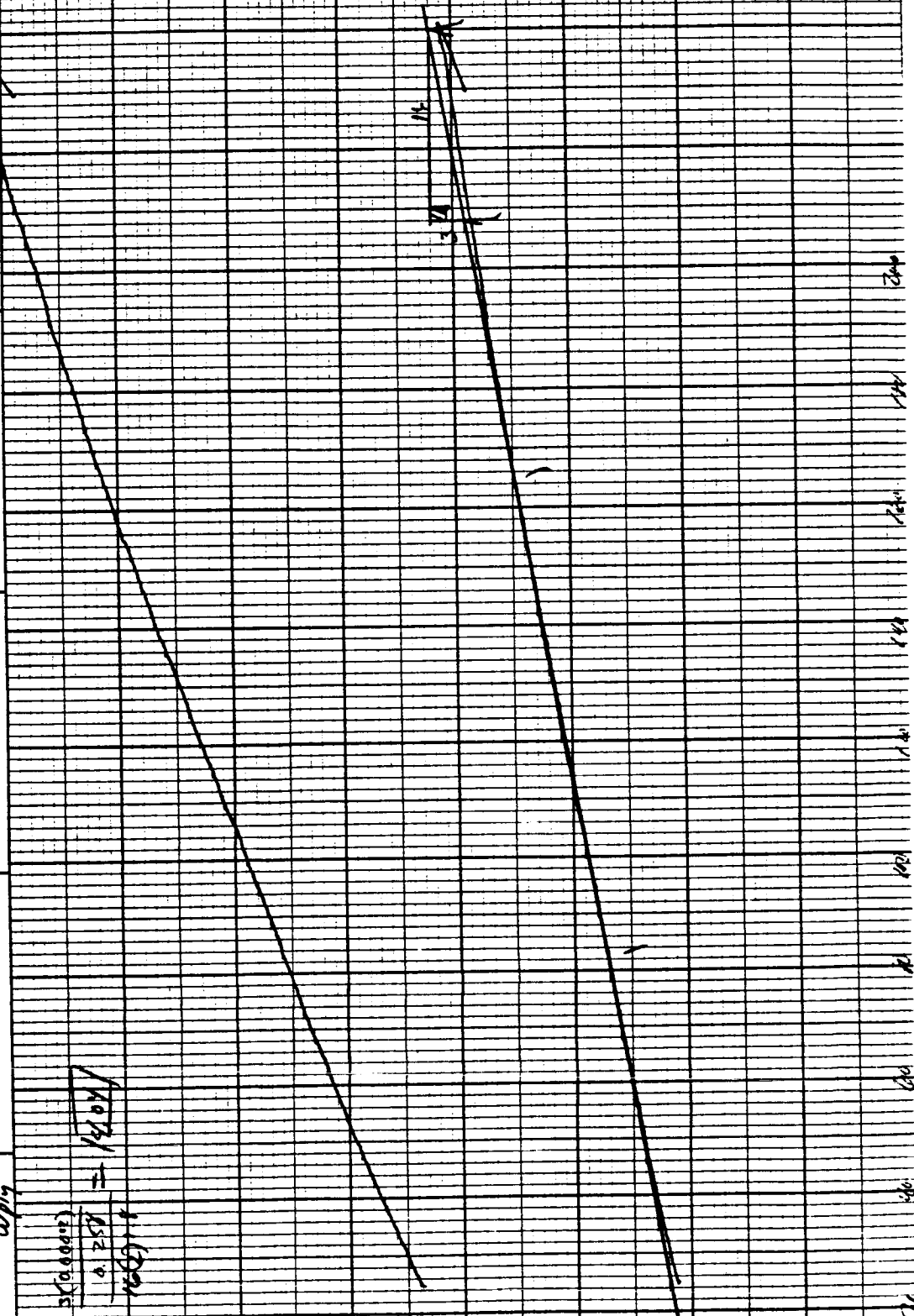
PART NO. 990088

RUN NO. _____ DATE <u>11/15/80</u> OPERATOR <u>TH</u> SAMPLE: <u>D09256 - 2 - (100-2)</u> ATM <u>411</u> @ <u>5TP</u> FLOW RATE <u>3.55 cc/g</u>	T-AXIS SCALE: °C/in. <u>50</u> / <u>20</u> PROG RATE: °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE: °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA <u>Sec/in./in.F</u> SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXAMINER</u> SAMPLE SIZE <u>0.25g</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. _____
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WPLY

$$\frac{11}{4.25} = 2.59$$

$$\frac{350000}{1000} = 350$$

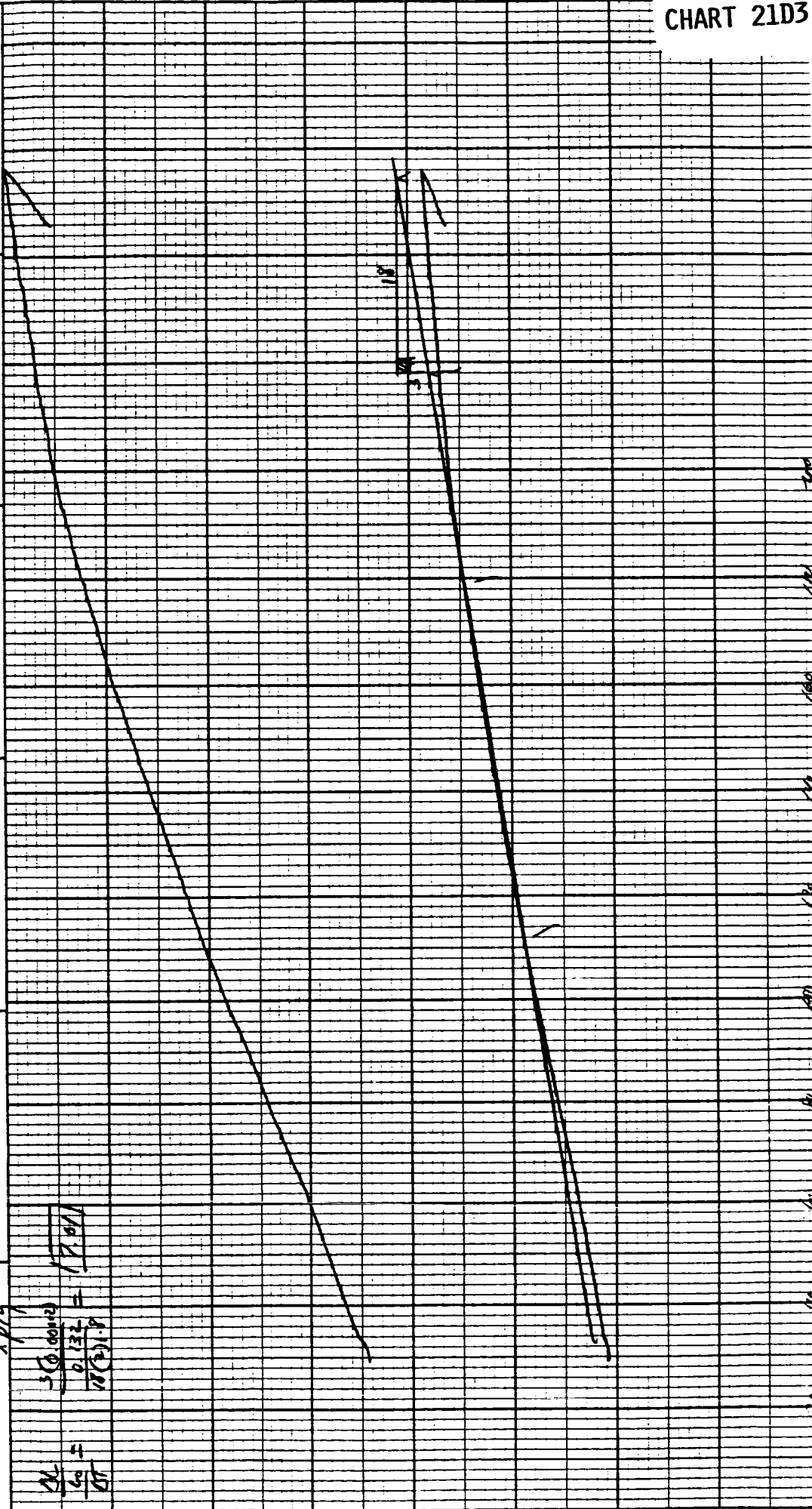


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PART NO. 990088

CHART 21D3

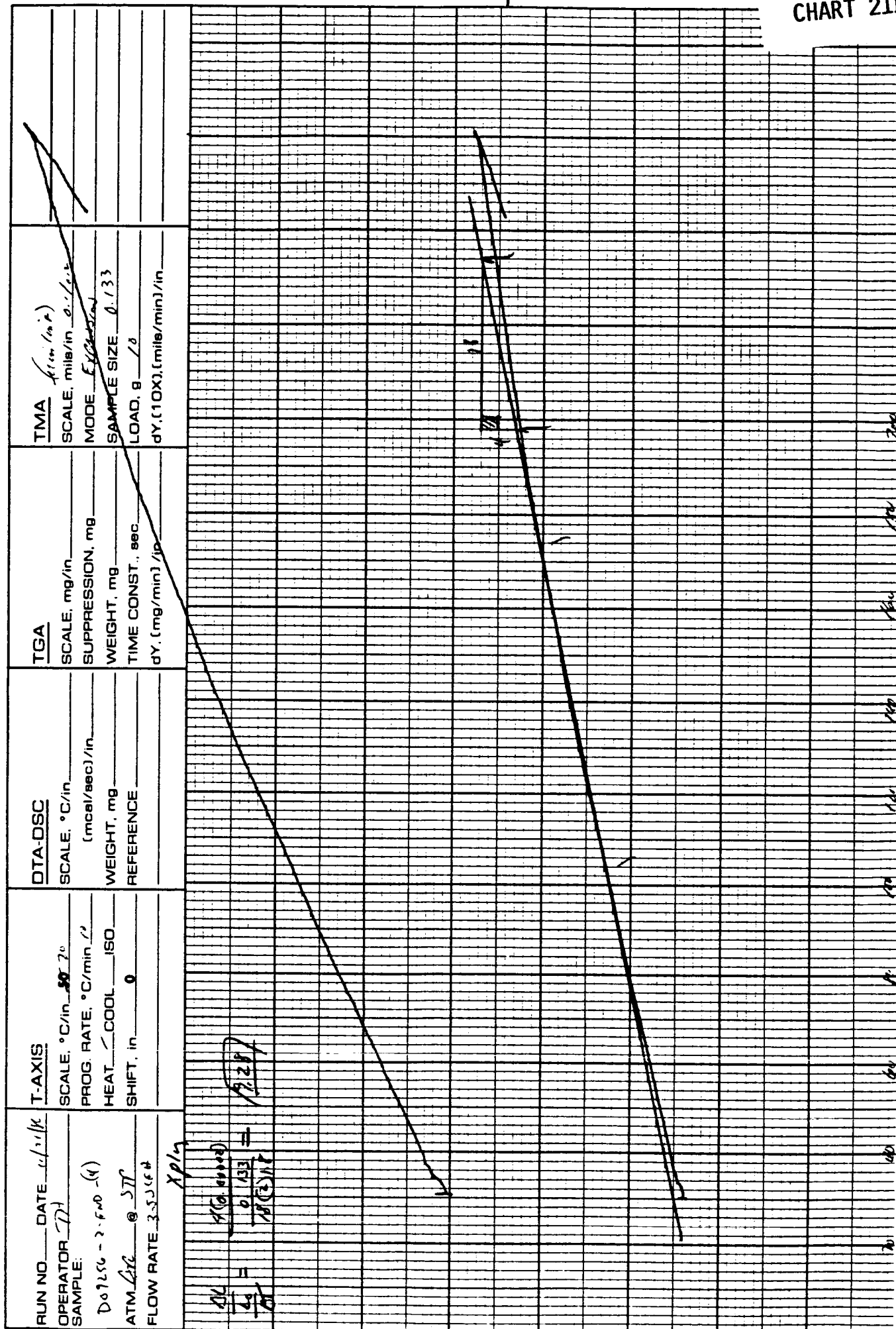
RUN NO. <u>4218</u> OPERATOR <u>DP</u> SAMPLE: <u>005240-2- (WD) - (3)</u> ATM <u>210</u> @ <u>JIP</u> FLOW RATE <u>3.5 SCFH</u>	<b>T-AXIS</b> SCALE °C/in <u>50/20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	<b>DTA-DSC</b> SCALE, °C/in <u>(mcal/sec)/in</u> WEIGHT, mg REFERENCE	<b>TGA</b> SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	<b>TMA</b> <u>(11 in / in °F)</u> SCALE, mils/in <u>0.1/0.2</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.132</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in
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PART NO. 990088

CHART 21D4



# ORIGINAL PAGE IS OF POOR QUALITY

PART NO. 990088

RUN NO. _____ OPERATOR <u>ST</u> SAMPLE: <u>Do 12.54 - 3.5 min - (1)</u> ATM. <u>At</u> @ <u>570</u> FLOW RATE <u>3.5 SLH</u>	T-AXIS SCALE, °C/in <u>30</u> PROG. RATE, °C/min <u>1.0</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in _____ (mcal/sec)/in _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in _____	TMA (in/in) SCALE, mils/in <u>0.001</u> MODE <u>Expansion</u> SAMPLE SIZE <u>0.25</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in _____
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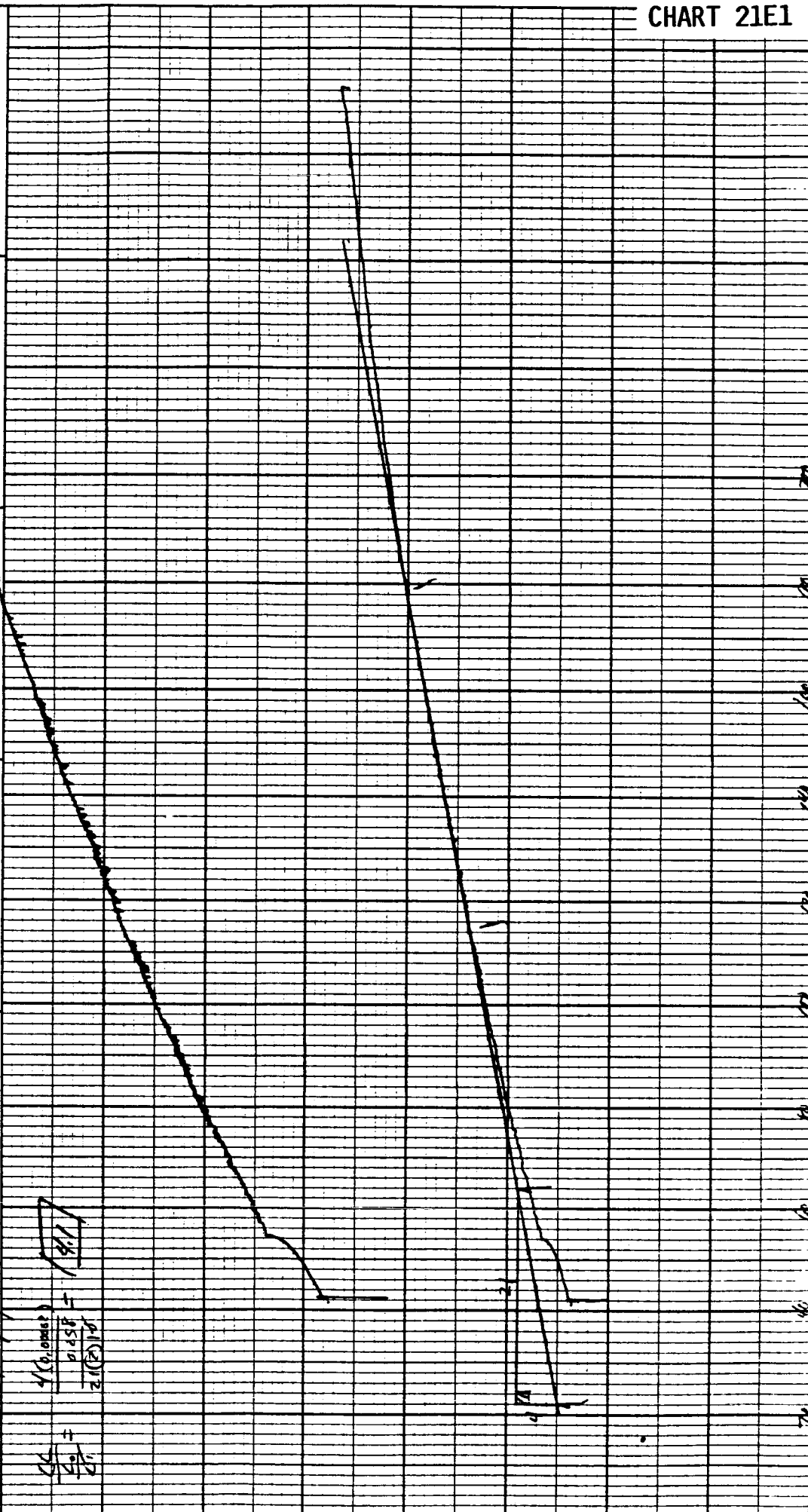


CHART 21E1

PART NO. 990088

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RUN NO. <u>DATE 10/1/86</u> OPERATOR <u>TD</u> SAMPLE: <u>PO 9250-3-START-2</u> ATM <u>44</u> @ <u>50</u> FLOW RATE <u>3-5118</u>	T-AXIS SCALE, °C/in. <u>50</u> <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg <u>REFERENCE</u>	TGA SCALE, mg/in <u>SCALE, mg/in</u> SUPPRESSION, mg <u>MODE <u>EXHAUST</u></u> WEIGHT, mg <u>SAMPLE SIZE <u>0.255</u></u> TIME CONST., sec <u>LOAD, g <u>1</u></u> dY, (mg/min)/in <u>dY, (10X), (mils/min)/in</u>	TMA SCALE, mils/in <u>SCALE, mils/in</u> MODE <u>EXHAUST</u> SAMPLE SIZE <u>0.255</u> LOAD, g <u>1</u> dY, (10X), (mils/min)/in
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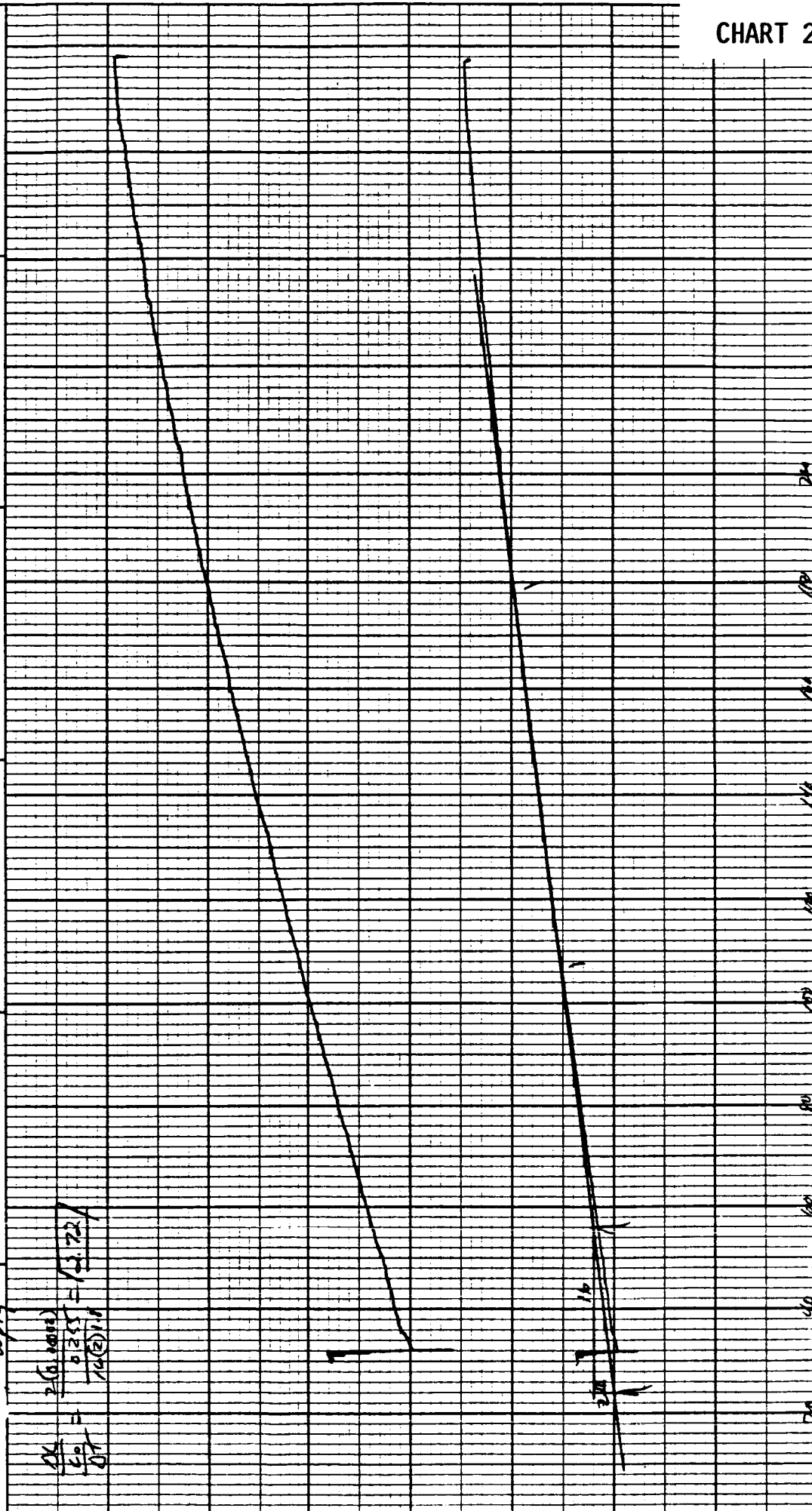
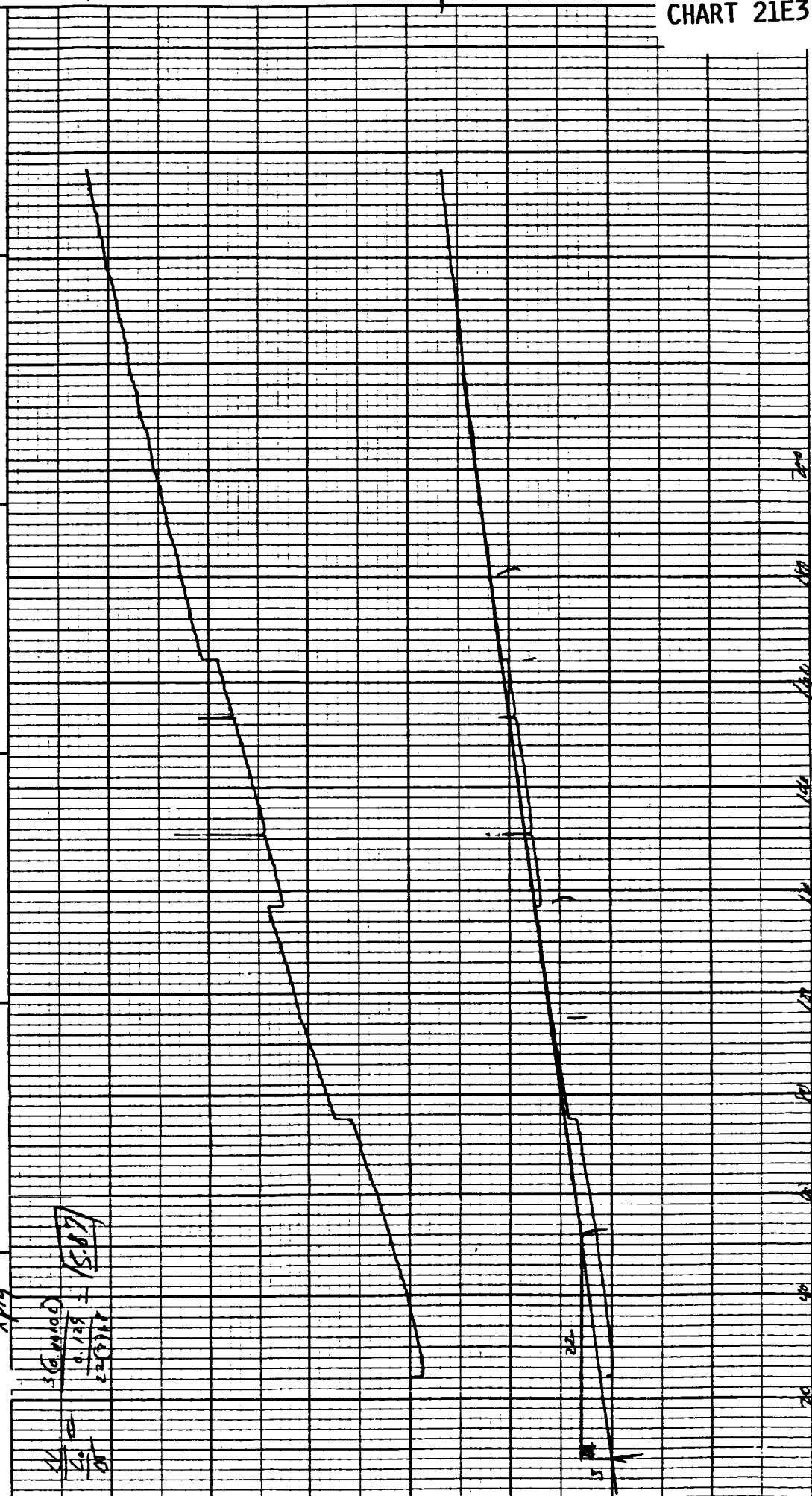


CHART 21E2

PART NO. 990088

RUN NO. _____	DATE <u>10/15/86</u>	T-AXIS SCALE, °C/in. <u>50</u> °C	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA (mm/min) SCALE, mm/in. <u>0.1/0.2</u> MODE <u>EXHAUST</u> SAMPLE SIZE <u>0.129</u> LOAD, g <u>10</u> dY, (10X), (mm/min)/in. _____
OPERATOR <u>PH</u>	PROG. RATE, °C/min. <u>10</u>	WEIGHT, mg _____	WEIGHT, mg _____	WEIGHT, mg _____	WEIGHT, mg _____
SAMPLE: <u>D05256-3-37MET (3)</u>	HEAT, °C/COOL, ISO _____	REFERENCE _____	REFERENCE _____	REFERENCE _____	REFERENCE _____
ATM. <u>200</u> @ <u>500</u>	SHIFT, in. <u>0</u>				
FLOW RATE <u>2.55 cc/h</u>					

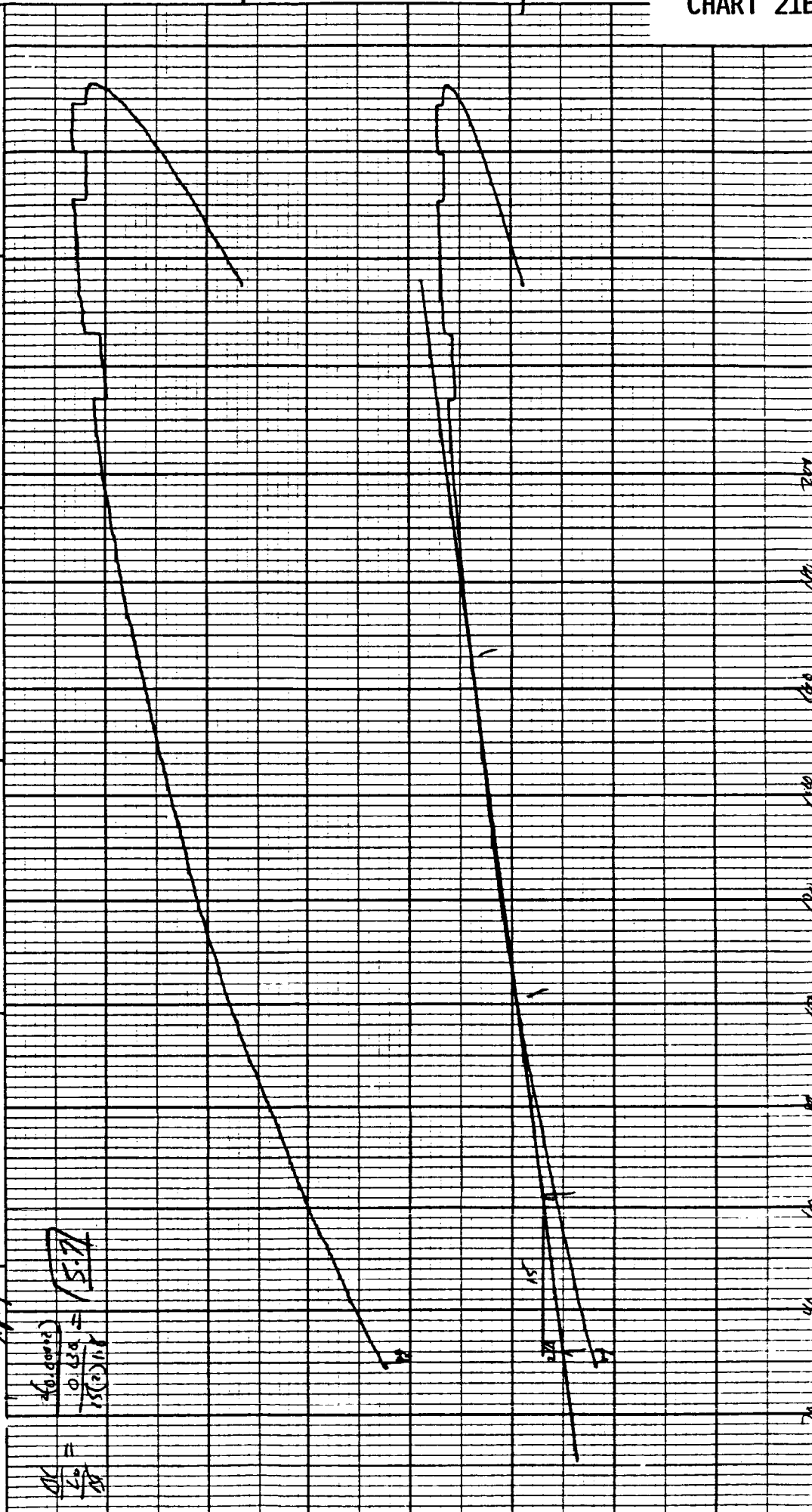




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OF POOR QUALITY

PART NO. 990086

RUN NO. _____	DATE <u>10/10/70</u>	T-AXIS SCALE: °C/in. <u>50/20</u>	DTA-DSC SCALE: °C/in. _____ (mcal/sec)/in. _____	TGA SCALE: mg/in. _____ SUPPRESSION: mg _____ WEIGHT: mg _____ TIME CONST.: sec _____ dY: (mg/min) /in. _____	TMA (μm/in.°F) SCALE: miles/in. <u>0.1/0.2</u> MODE <u>EXHAUST</u> SAMPLE SIZE <u>0.130</u> LOAD: g <u>10</u> dY: (10X) (mils/min) /in. _____
OPERATOR <u>JD</u>	PROG RATE: °C/min <u>10</u>	WEIGHT: mg _____	REFERENCE _____		
SAMPLE: <u>D09250-3-STM-4</u>	HEAT: <u>COOL</u> ISO _____				
ATM <u>20</u> @ <u>STP</u>	SHIFT: in. <u>0</u>				
FLOW RATE <u>3.5</u> (cc/min)					



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PART NO. 990086

RUN NO. <u>1111</u> OPERATOR <u>TD</u> SAMPLE: <u>D09256-3-FM1-(1)</u> ATM <u>24.1</u> @ <u>500</u> FLOW RATE <u>2.53 CFM</u>	<b>T-AXIS</b> SCALE, °C/in. <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	<b>DTA-DSC</b> SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	<b>TGA</b> SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	<b>TMA</b> <u>6 in/in</u> SCALE, mils/in. <u>0.002</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.255</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. _____
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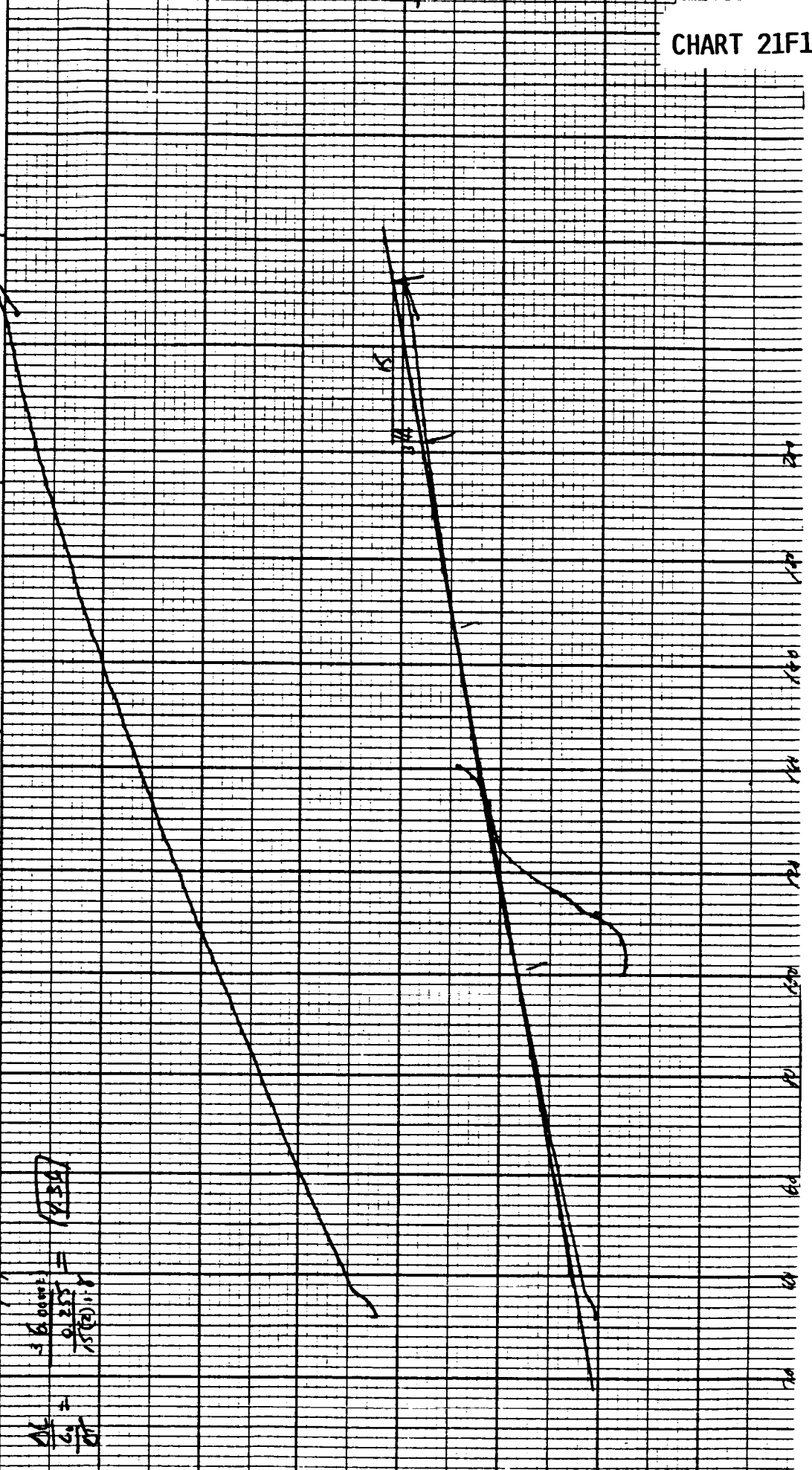
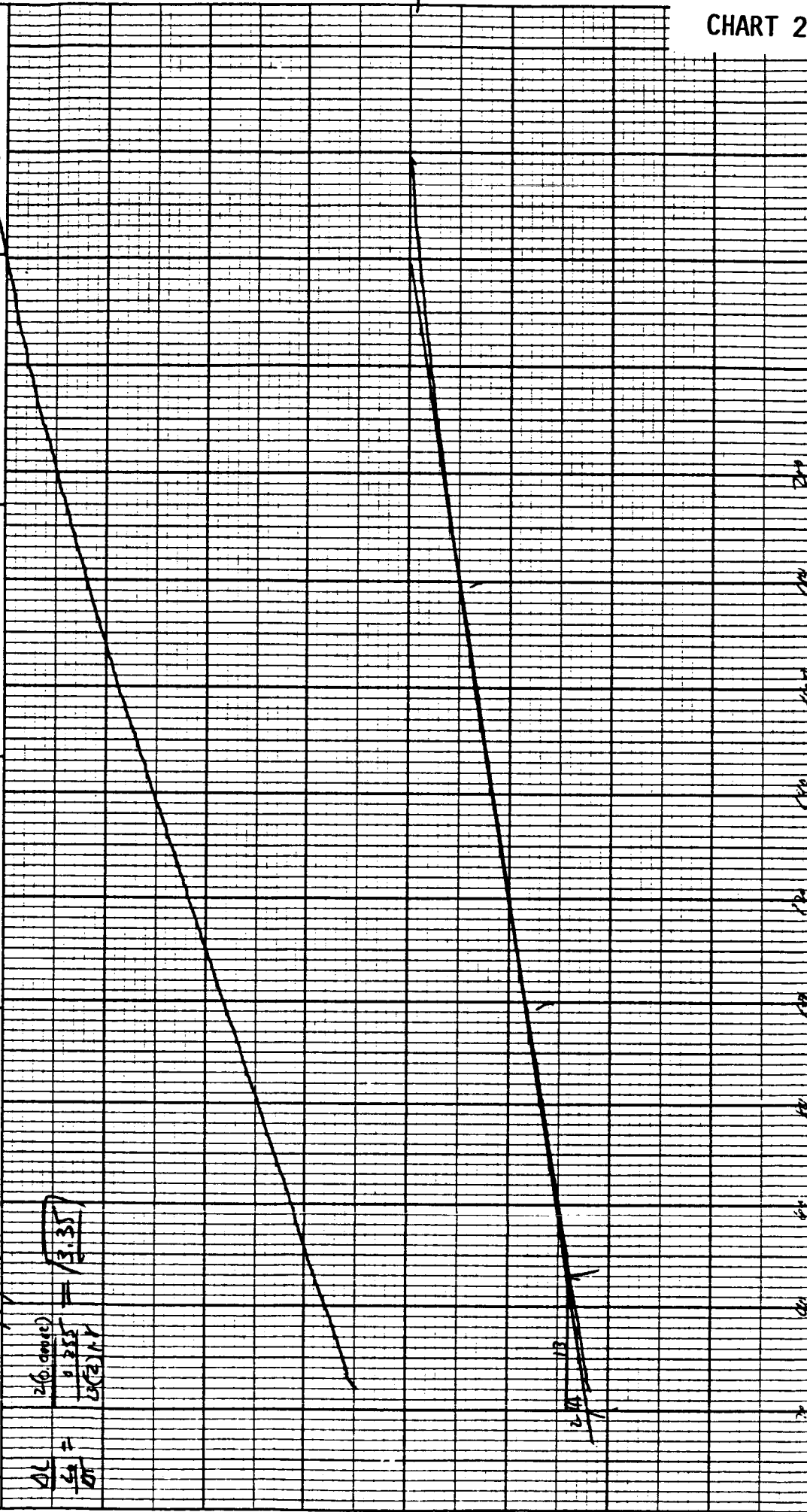


CHART 21F1

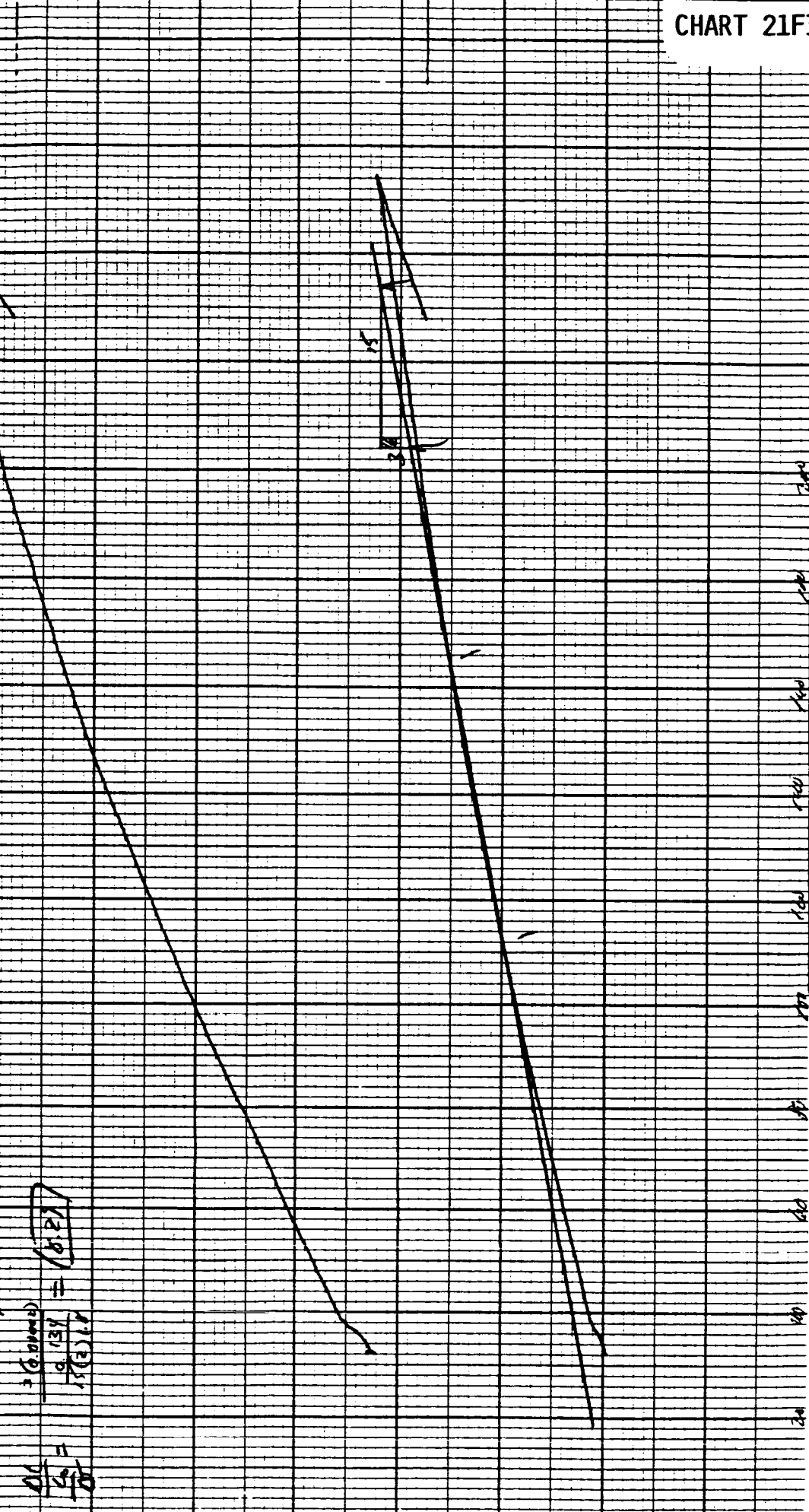
RUN NO. <u>1111</u> OPERATOR <u>DL</u> SAMPLE: <u>D05156-3-FW (2)</u> ATM <u>422</u> @ <u>SEP</u> FLOW RATE <u>3.5514</u>	T-AXIS SCALE, °C/in <u>50</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in (mcal/sec)/in WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min) /in	TMA <u>(Gain/in)</u> SCALE, mils/in <u>0.1</u> MODE <u>Expansion</u> SAMPLE SIZE <u>0.555</u> LOAD, g <u>10</u> dY, (10X), (mils/min) /in
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PART NO. 990088

RUN NO. _____	DATE 11/11/80	T-AXIS		DTA-DSC		TGA		TMA	
OPERATOR JZ		SCALE, °C/in. 50	SCALE, °C/in. 20	SCALE, mg/in. _____	SCALE, mg/in. 0.1/0.2			MODE 1000	
SAMPLE: D072 (6-3-84) - (5)		PRDG. RATE, °C/min 10		(mcal/sec)/in. _____				SAMPLE SIZE 0.124	
ATM. 62 @ JTP		HEAT COOL ISO		WEIGHT, mg _____	WEIGHT, mg _____			LOAD, g 10	
FLOW RATE 3-51CF4		SHIFT, in 0		REFERENCE _____	TIME CONST., sec _____			dY, (10X), (mils/min) 10	



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PART NO. 990088

RUN NO. <u>42116</u> OPERATOR <u>JD</u> SAMPLE: <u>DO 1256-5-FMD (1)</u> ATM <u>PM</u> @ <u>5:20</u> FLOW RATE <u>2-5558</u>	<b>T-AXIS</b> SCALE, °C/in <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	<b>DTA-DSC</b> SCALE, °C/in (mcal/sec)/in WEIGHT, mg REFERENCE	<b>TGA</b> SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	<b>TMA</b> <u>(mm/hr)</u> SCALE, mm/in <u>0.1/40</u> MODE <u>EXTENDED</u> SAMPLE SIZE <u>0.131</u> LOAD, g <u>50</u> dY (PROX), (mm/min)/in
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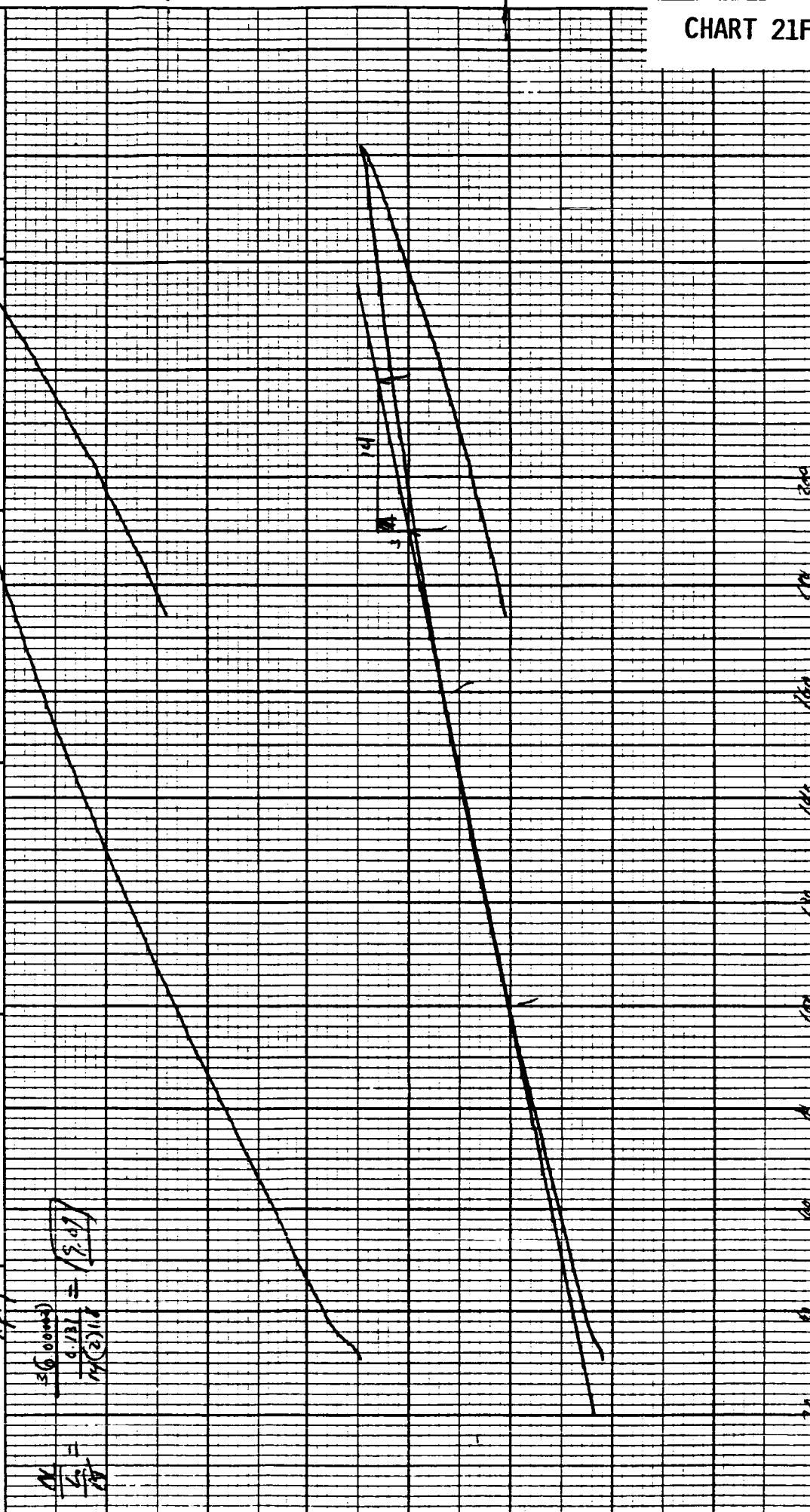


CHART 21F4

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OF POOR QUALITY

PART NO. 990088

RUN NO. <u>14</u> DATE <u>12/14/84</u>	T-AXIS SCALE, °C/in <u>20</u>	DTA-DSC SCALE, °C/in <u>10</u>	IGA SCALE, mg/in <u>10</u>	TMA <u>(in./in./hr)</u>
OPERATOR <u>DT</u>	PROG. RATE, °C/min <u>10</u>	WEIGHT, mg <u>10</u>	SUPPRESSION, mg <u>10</u>	SCALE, miles/in <u>0.1/0.2</u>
SAMPLE: <u>D9256 - 11- Smart-11</u>	HEAT <u>COOL</u> ISO	REFERENCE	WEIGHT, mg <u>10</u>	MODE <u>Extension</u>
ATM <u>AK</u> @ <u>500</u>	SHIFT, in <u>0</u>		TIME CONST, sec <u>10</u>	SAMPLE SIZE <u>0.251</u>
FLOW RATE <u>3-53CEA</u>			LOAD, g <u>10</u>	LOAD, g <u>10</u>
			dY, (mg/min) /in	dY, (10X) (miles/min) /in

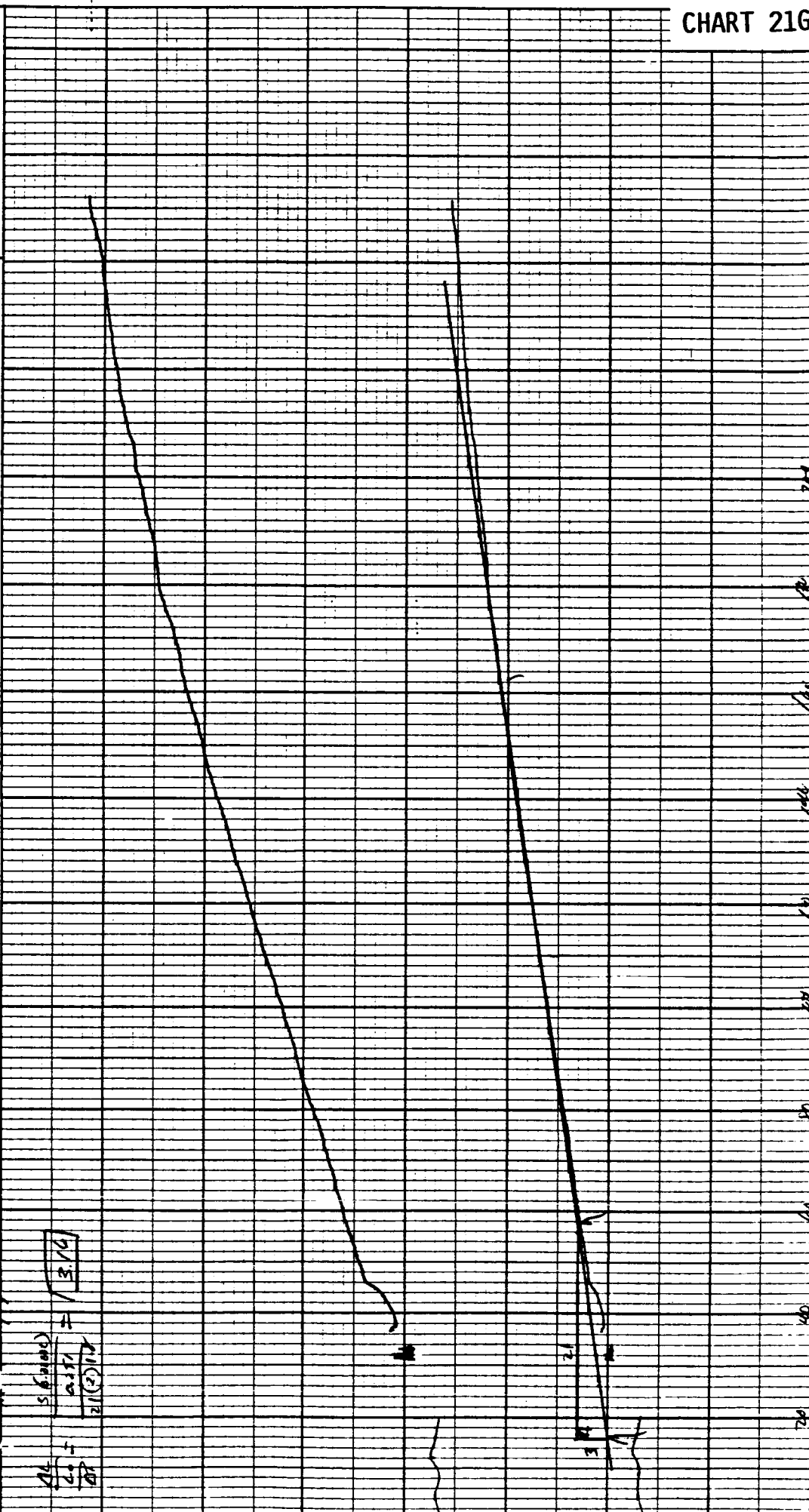


CHART 2161

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OF POOR QUALITY

PART NO. 990088

RUN NO. _____	DATE <u>10/19/86</u>	T-AXIS SCALE, °C/in. <u>50/20</u>	DTA-DSC SCALE, °C/in. (mcal/sec)/in.	TGA SCALE, mg/in.	TMA SCALE, mils/in. <u>0.1/0.2</u>
OPERATOR <u>TH</u>	PROG. RATE, °C/min <u>10</u>	WEIGHT, mg	SUPPRESSION, mg	MODE <u>EXOTHERM</u>	
SAMPLE: <u>D03256-4-5mer-(2)</u>	HEAT <u>COOL</u> ISO	REFERENCE	WEIGHT, mg	SAMPLE SIZE <u>0.255</u>	
ATM. <u>20</u> @ <u>STP</u>	SHIFT, in. <u>0</u>		TIME CONST., sec	LOAD, g <u>10</u>	
FLOW RATE <u>3-55 (FH)</u>			dY, (mg/min) / in.	dY, (10X) (mils/min) / in.	

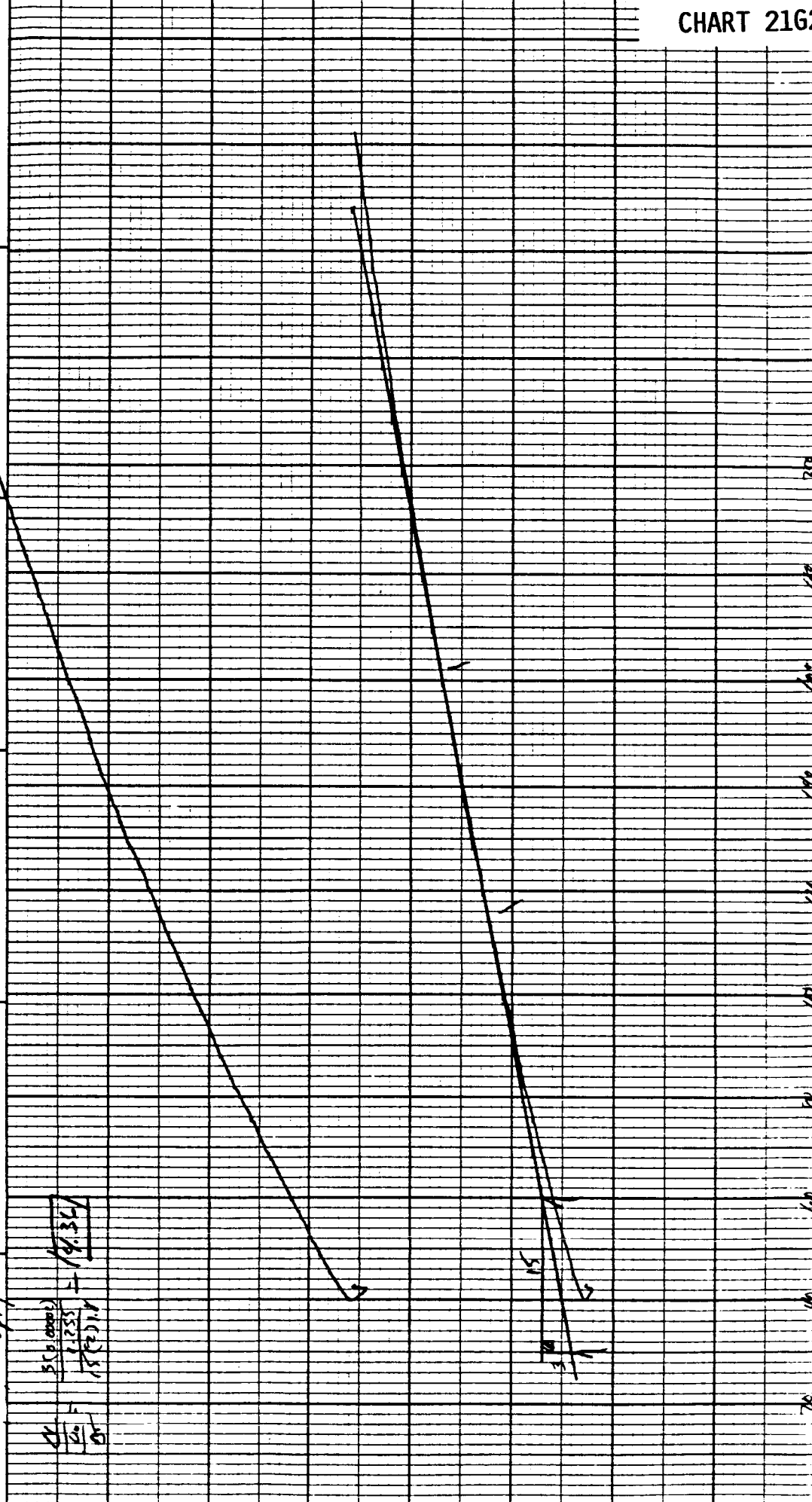
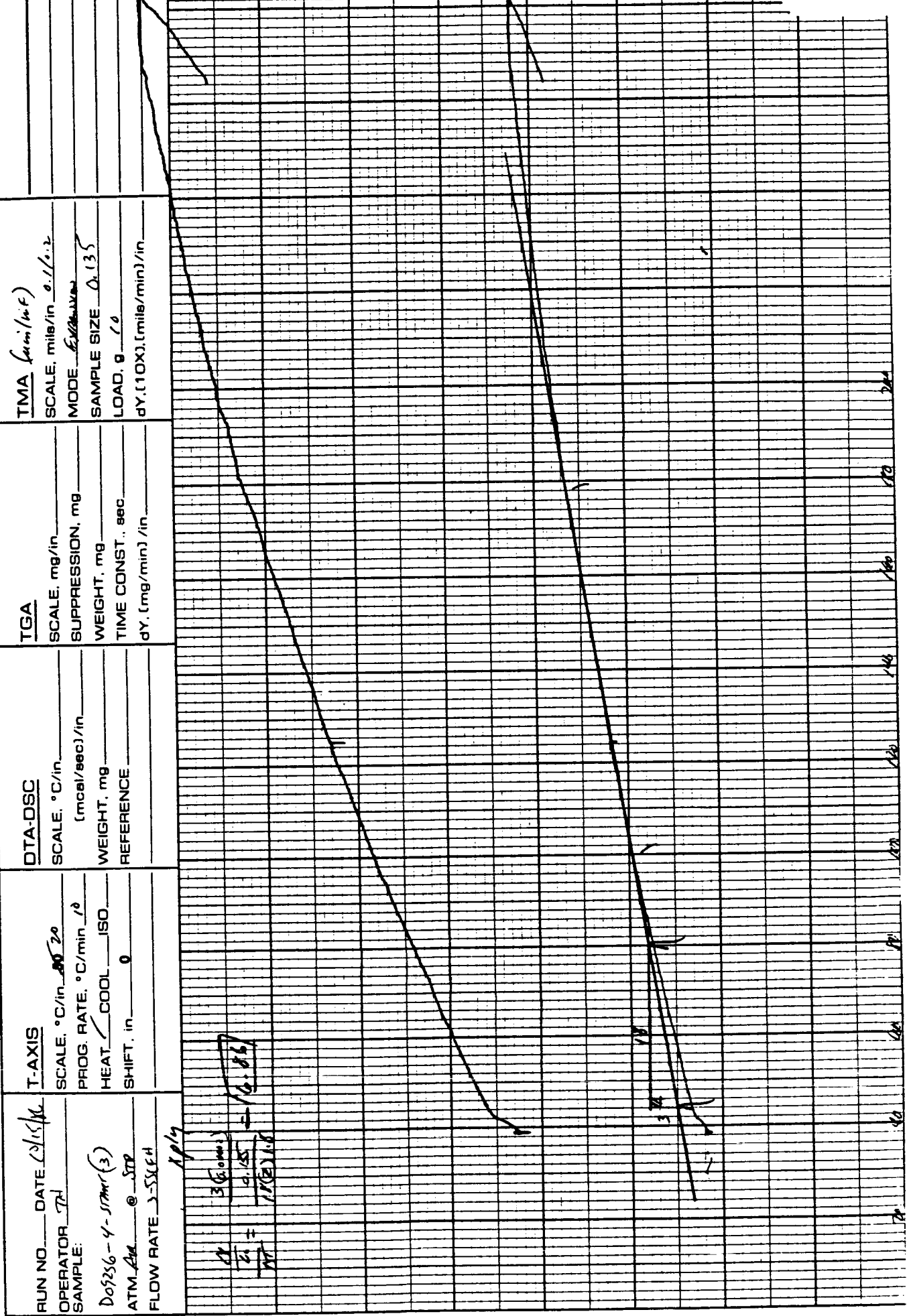


CHART 2162

PART NO. 990086



RUN NO. <u>121516</u> OPERATOR <u>TH</u> SAMPLE: <u>DO236-4-SIMR(3)</u> ATM. <u>24</u> @ <u>500</u> FLOW RATE <u>3-5544</u>	T-AXIS SCALE, °C/in. <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg <u>REFERENCE</u>	TGA SCALE, mg/in. <u>10</u> SUPPRESSION, mg <u>10</u> WEIGHT, mg <u>10</u> TIME CONST., sec <u>10</u> dY, (mg/min) /in. <u>10</u>	TMA (in/in/°F) SCALE, miles/in. <u>0.1/0.2</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.135</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. <u>10</u>
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PART NO. 990088

RUN NO. _____ DATE <u>10/15/76</u> OPERATOR <u>AD</u> SAMPLE: <u>D61254 - (1-5)MMS - (11)</u> ATM <u>24</u> @ <u>370</u> FLOW RATE <u>3-53cc</u>	T-AXIS SCALE, °C/in. <u>50</u> <u>20</u> PROG. RATE, °C/min <u>20</u> HEAT / COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA <u>500/100</u> SCALE, mils/in. <u>0.1/0.2</u> MODE <u>Exp. 100</u> SAMPLE SIZE <u>0.134</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. _____
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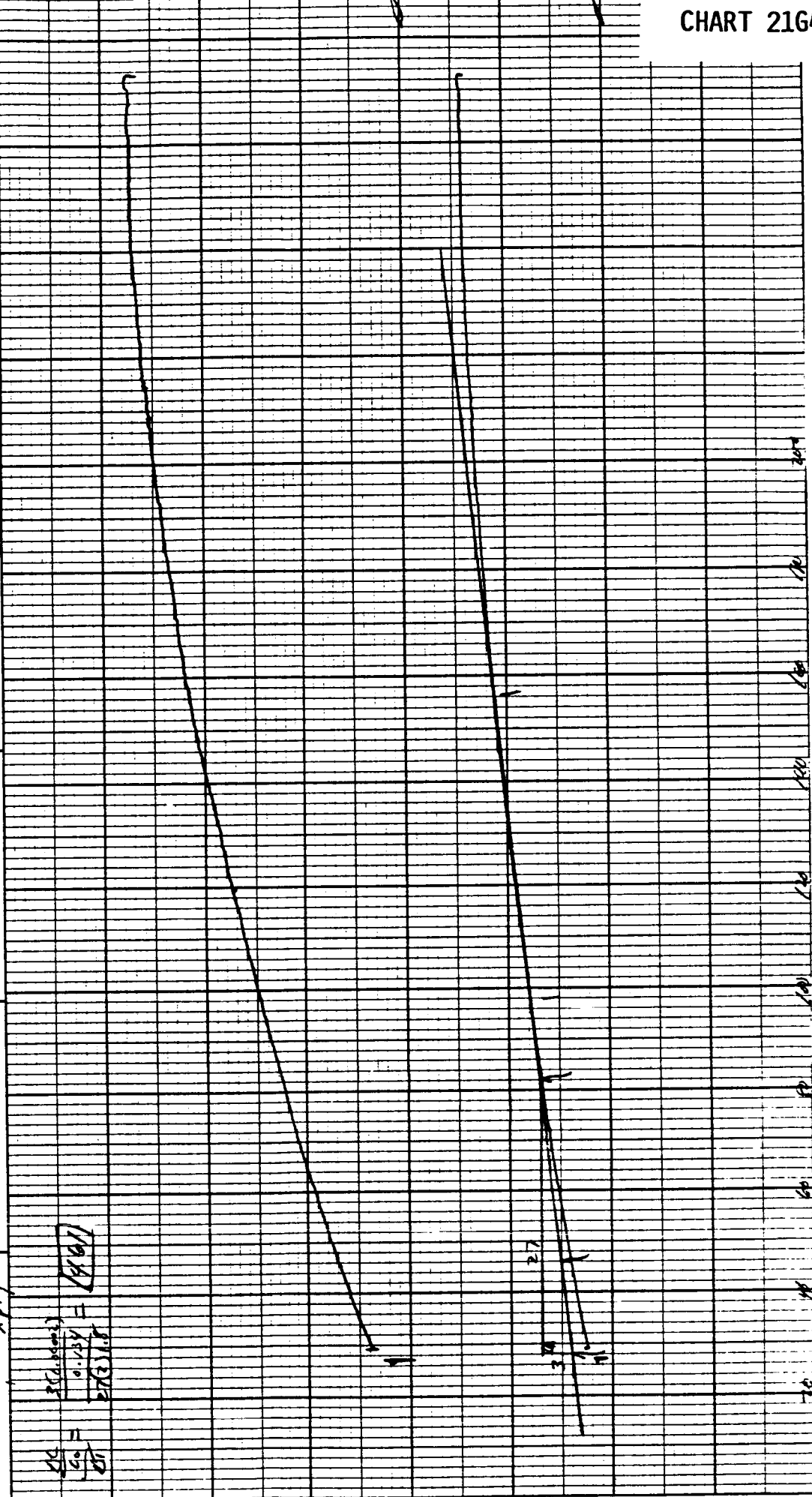


CHART 2164

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OF POOR QUALITY

PART NO. 990088

RUN NO. <u>11/20/64</u> OPERATOR <u>JTP</u> SAMPLE <u>D09256-4-1200-46</u> ATM <u>20</u> @ <u>5TP</u> FLOW RATE <u>3-50cc</u>	<b>T-AXIS</b> SCALE, °C/in. <u>50</u> °C PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	<b>DTA-DSC</b> SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	<b>TGA</b> SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	<b>TMA</b> <u>(10X)</u> SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.254</u> LOAD, g <u>0</u> dY, (10X), (mils/min)/in. _____
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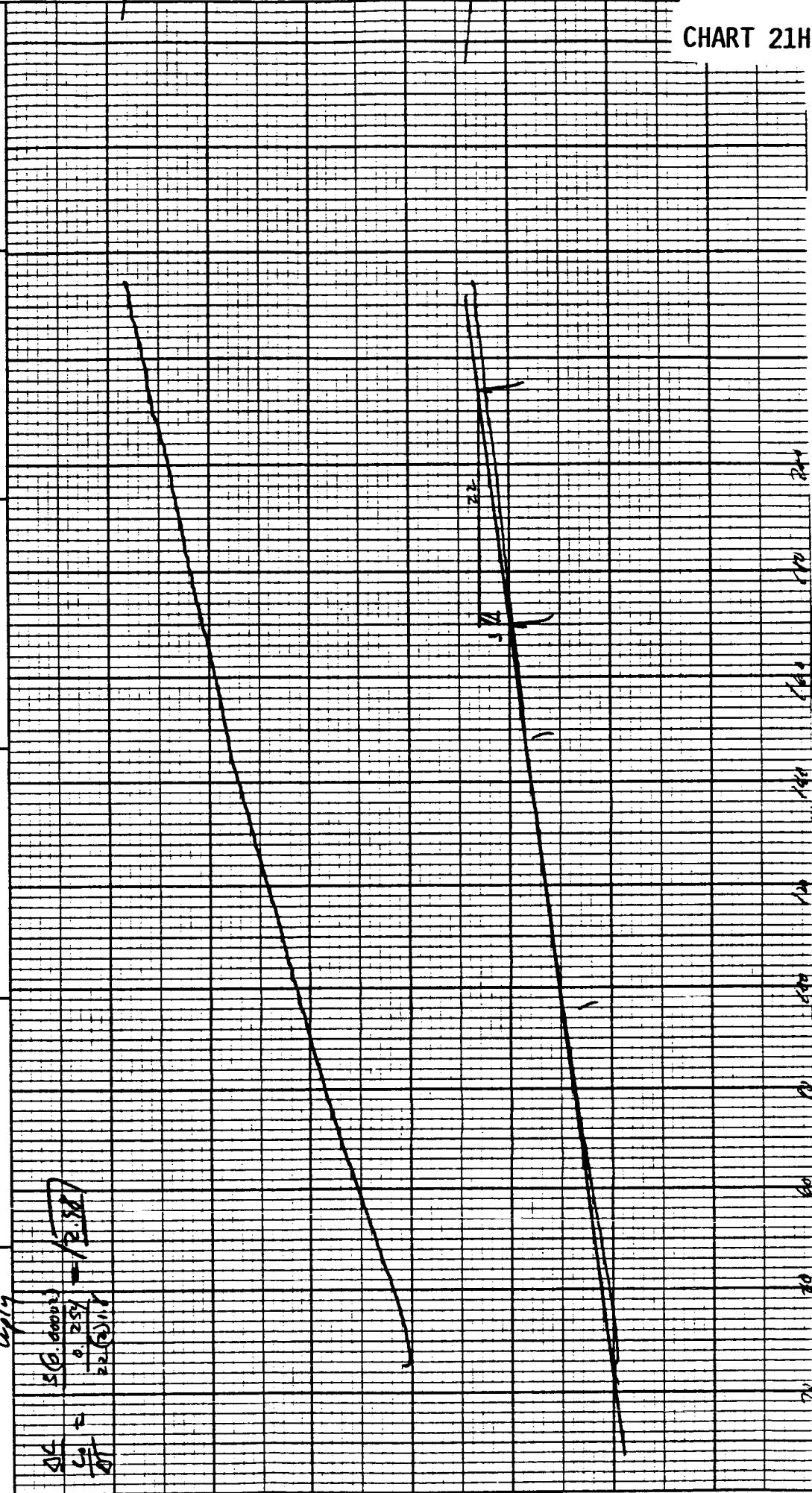


CHART 21H1

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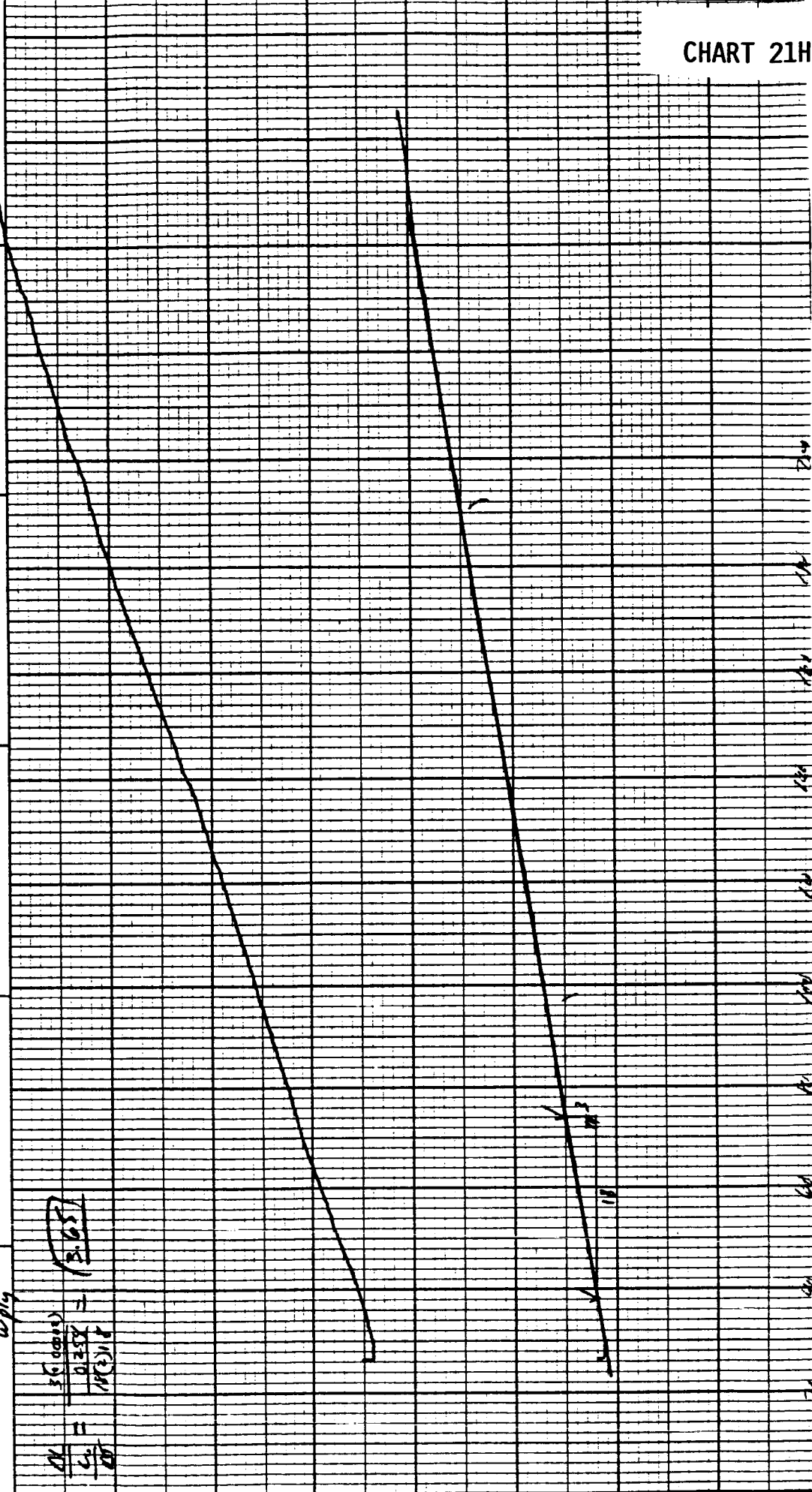
PART NO. 990088

CHART 21H2

RUN NO. <u>111211</u> OPERATOR <u>DJ</u> SAMPLE: <u>D-519-4-100-(2)</u> ATM. <u>44</u> @ <u>570</u> FLOW RATE <u>3.53 cc</u>		T-AXIS SCALE, °C/in. <u>50</u> PROG. RATE, °C/min. <u>2</u> HEAT / COOL <u>ISO</u> SHIFT, in. <u>0</u>		DTA-DSC SCALE, °C/in. <u>          </u> (mcal/sec)/in. <u>          </u> WEIGHT, mg <u>          </u> REFERENCE <u>          </u>		TGA SCALE, mg/in. <u>          </u> SUPPRESSION, mg <u>          </u> WEIGHT, mg <u>          </u> TIME CONST., sec <u>          </u> dY, (mg/min)/in. <u>          </u>		TMA <u>          </u> SCALE, mils/in. <u>0.001</u> MODE <u>Extension</u> SAMPLE SIZE <u>0.254</u> LOAD, g <u>1</u> dY, (10X), (mils/min)/in. <u>          </u>	
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wply

$$\frac{36.00000}{0.254} = 13.65$$



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OF POOR QUALITY

PART NO. 990088

RUN NO. <u>DATE 11/21/80</u> OPERATOR <u>721</u> SAMPLE: <u>Do 2250 - 1-EMP - (3)</u> ATM. <u>FLC</u> @ <u>STP</u> FLOW RATE <u>2.5 SCFH</u>	T-AXIS SCALE, °C/in <u>50/20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>—</u> COOL <u>—</u> ISO <u>—</u> SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in <u>(mcal/sec)/in</u> WEIGHT, mg <u>—</u> REFERENCE <u>—</u>	TGA SCALE, mg/in <u>—</u> SUPPRESSION, mg <u>—</u> WEIGHT, mg <u>—</u> TIME CONST., sec <u>—</u> dY, (mg/min)/in <u>—</u>	TMA <u>(4 in/in)</u> SCALE, mils/in <u>0.1/0.2</u> MODE <u>EXTRUSION</u> SAMPLE SIZE <u>0.137</u> LOAD, g <u>20</u> dY, (10X), (mils/min)/in <u>—</u>
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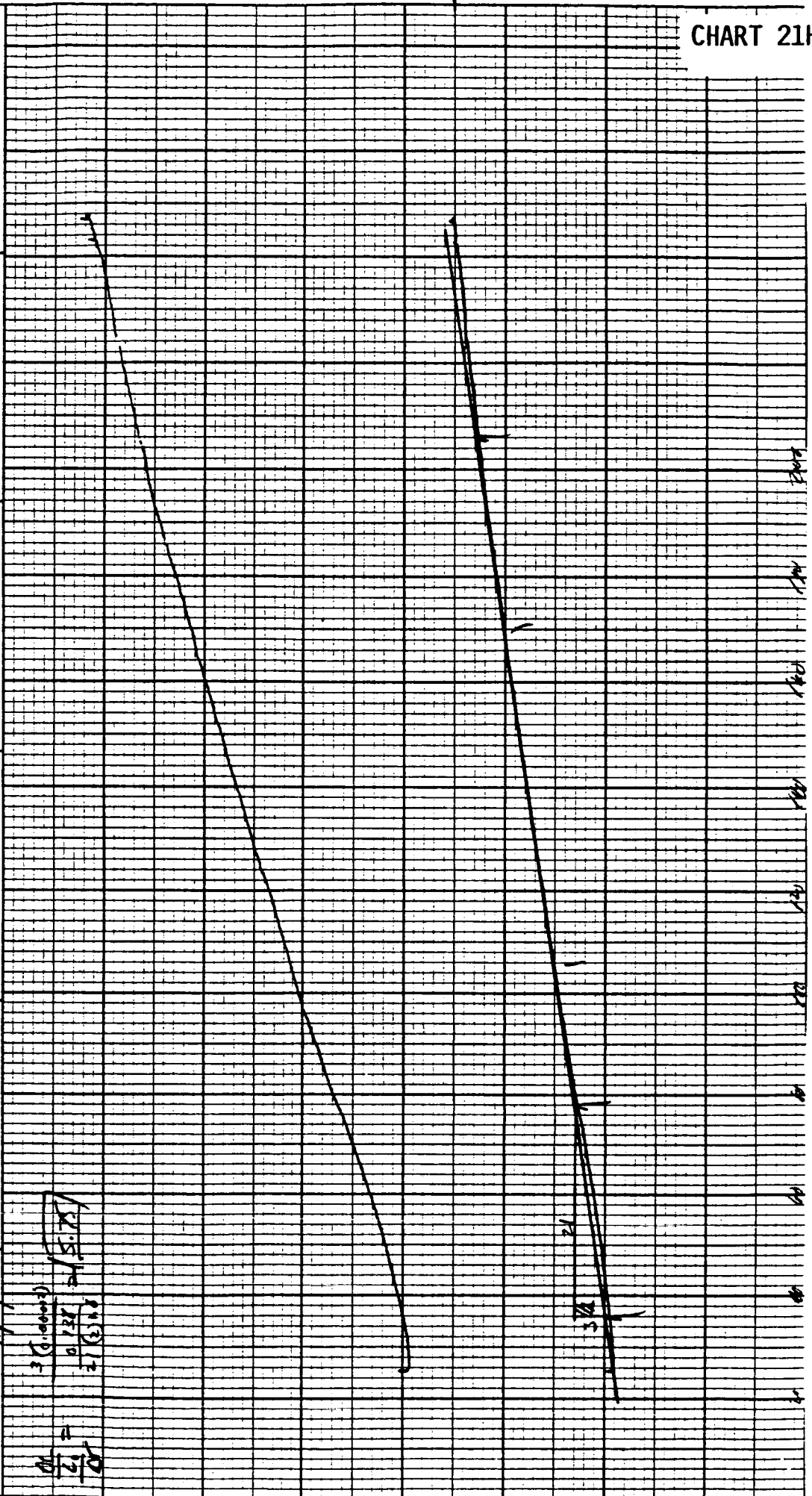
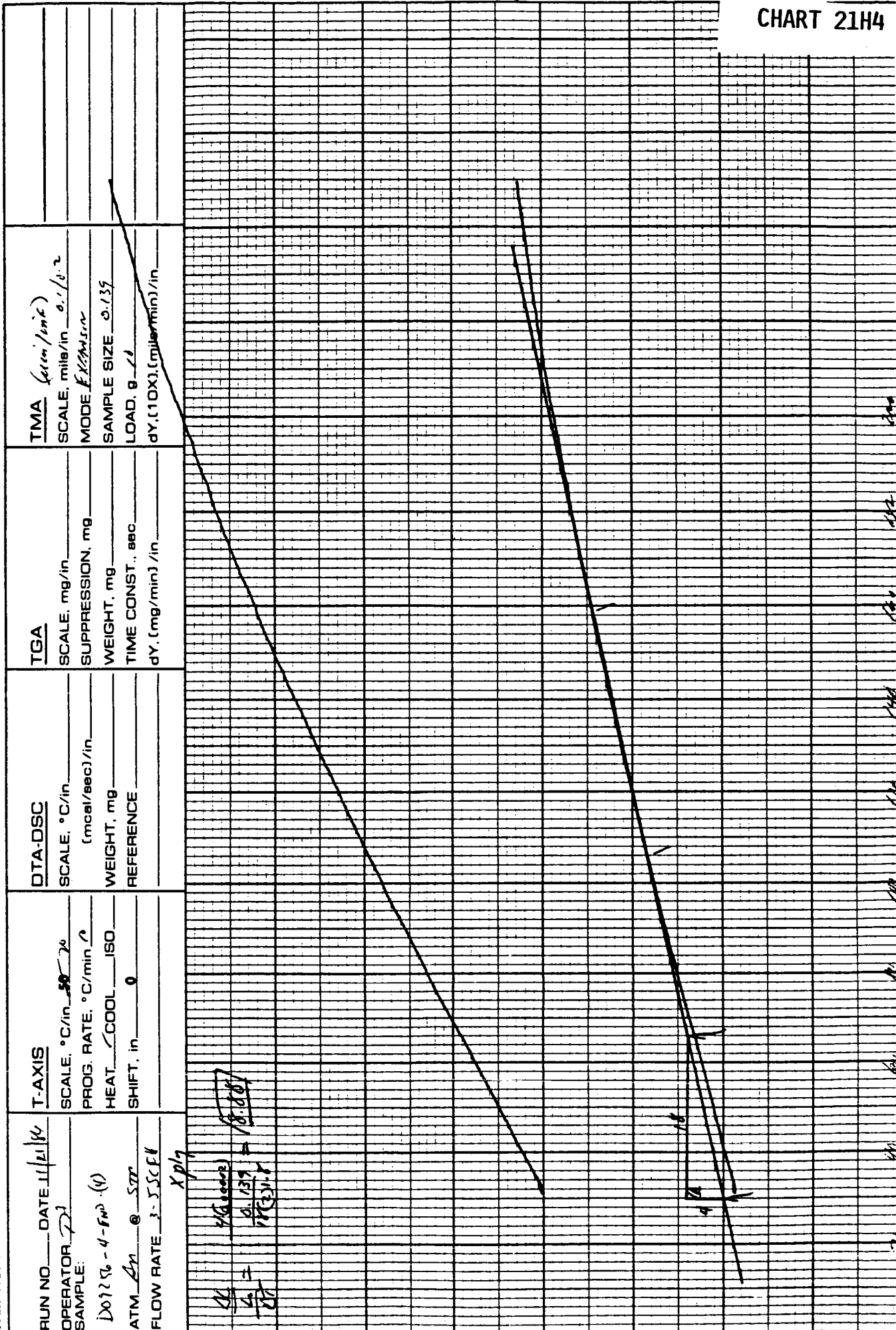


CHART 21H3

ORIGINAL PAGE IS  
OF POOR QUALITY

PART NO. 990088

CHART 21H4

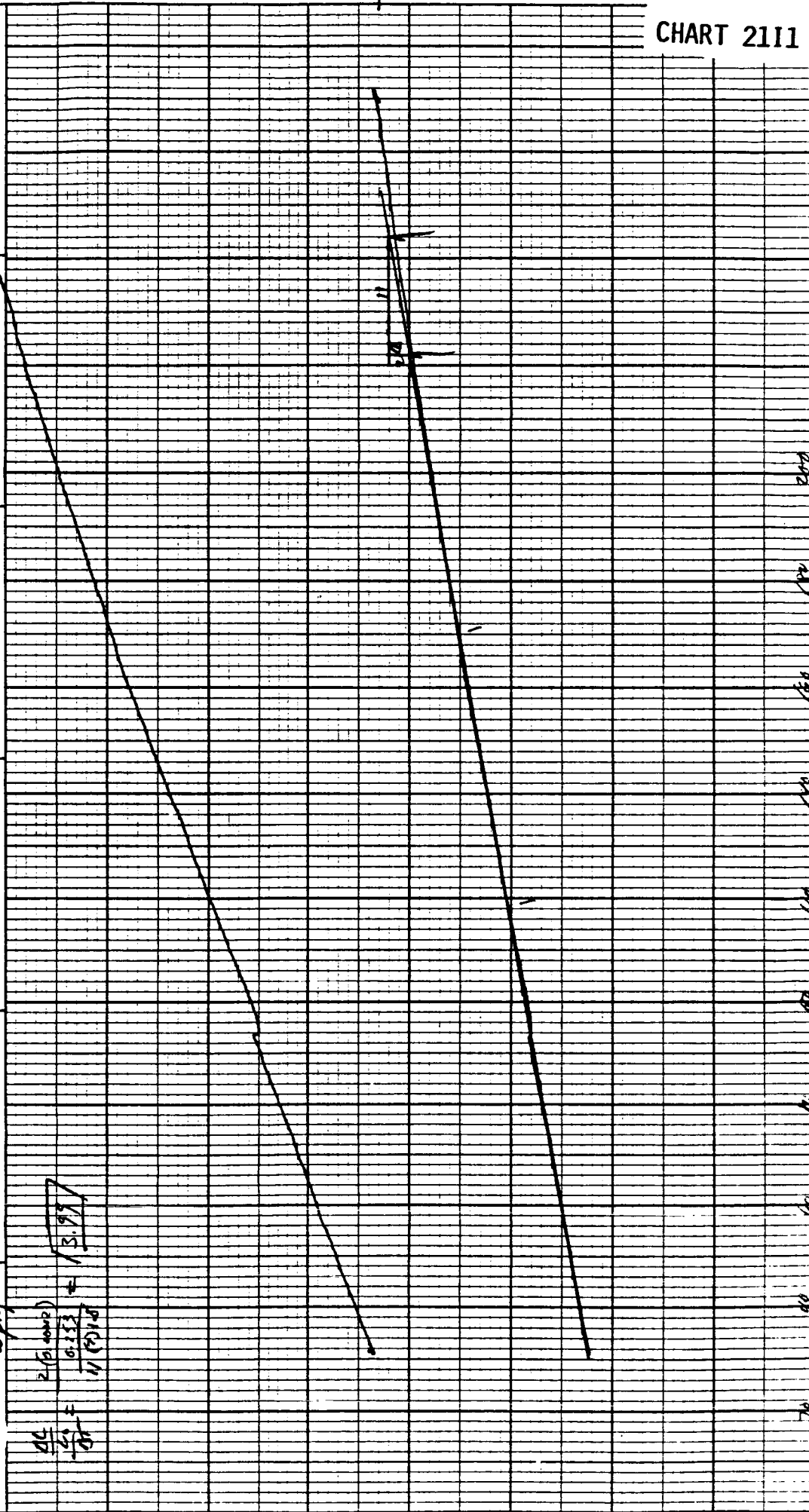


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OF POOR QUALITY

PART NO. 990088

CHART 2111

RUN NO. <u>101616</u> OPERATOR <u>TH</u> SAMPLE: <u>D09556-5-S-STAR (1)</u> ATM/HR @ <u>570</u> FLOW RATE <u>3.55 L/H</u>	<b>T-AXIS</b> SCALE, °C/in <u>50 20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in <u>0</u>	<b>DTA-DSC</b> SCALE, °C/in (mcal/sec)/in WEIGHT, mg REFERENCE	<b>TGA</b> SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	<b>TMA</b> <u>500/100</u> SCALE, mils/in <u>0.001</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.253</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in
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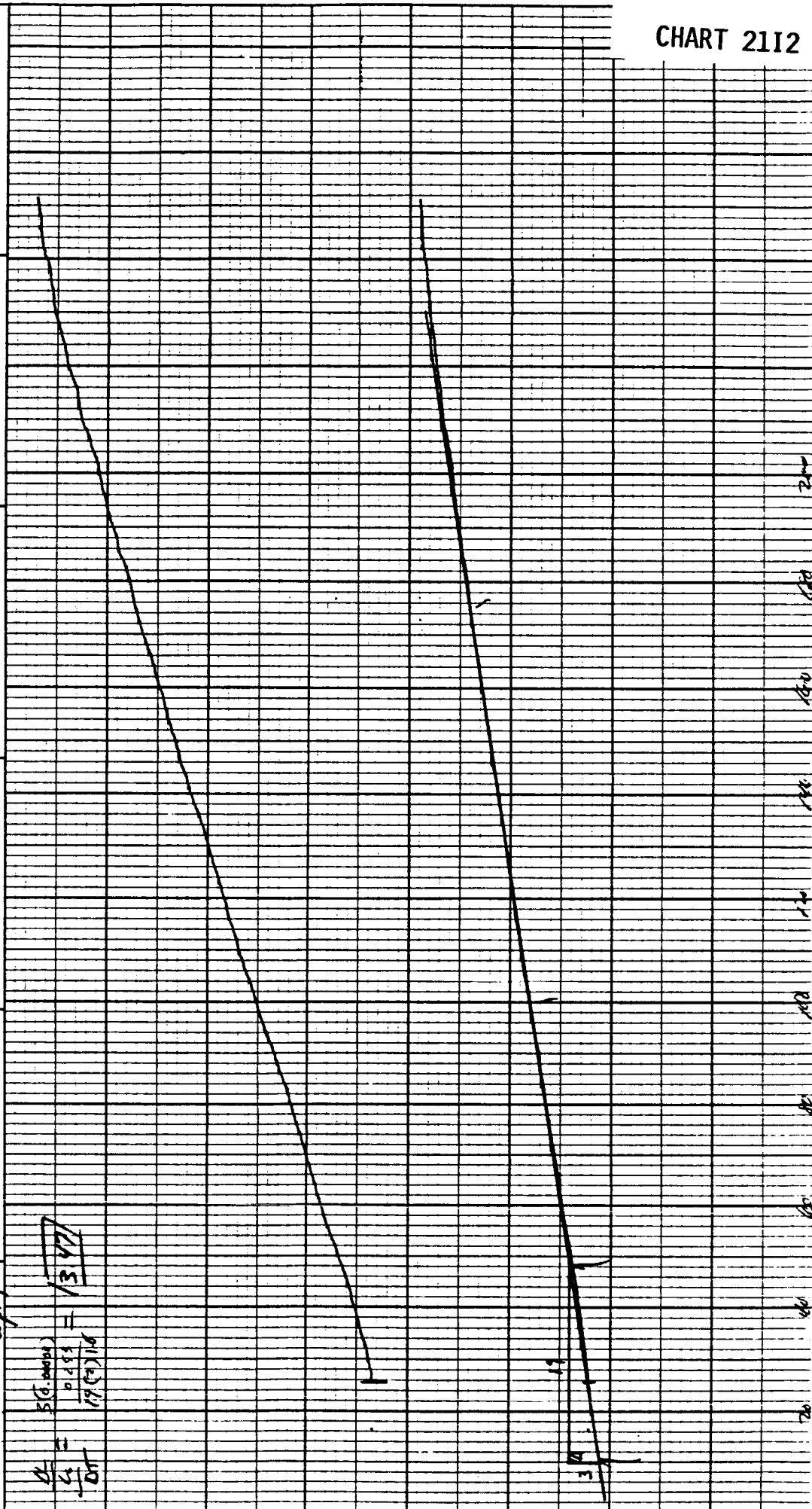


ORIGINAL PAGE IS  
OF POOR QUALITY

PART NO. 990088

CHART 2112

RUN NO. _____ DATE <u>10/14/86</u> OPERATOR <u>TH</u> SAMPLE: <u>Do 95.56 - 5-50000 - (2)</u> ATM. <u>Atk</u> @ <u>500</u> FLOW RATE <u>3.53</u> <u>cc/min</u>	T-AXIS SCALE, °C/in <u>50</u> <u>20</u> PROG. RATE, °C/min <u>20</u> HEAT <u>COOL</u> <u>ISO</u> SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in _____ (mcal/sec)/in _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in _____	TMA <u>(0.01 in/in)</u> SCALE, mils/in <u>0.1/0.2</u> MODE <u>DIFFERENTIAL</u> SAMPLE SIZE <u>0.153</u> LOAD, g <u>1.0</u> dY, (10X), (mils/min)/in _____
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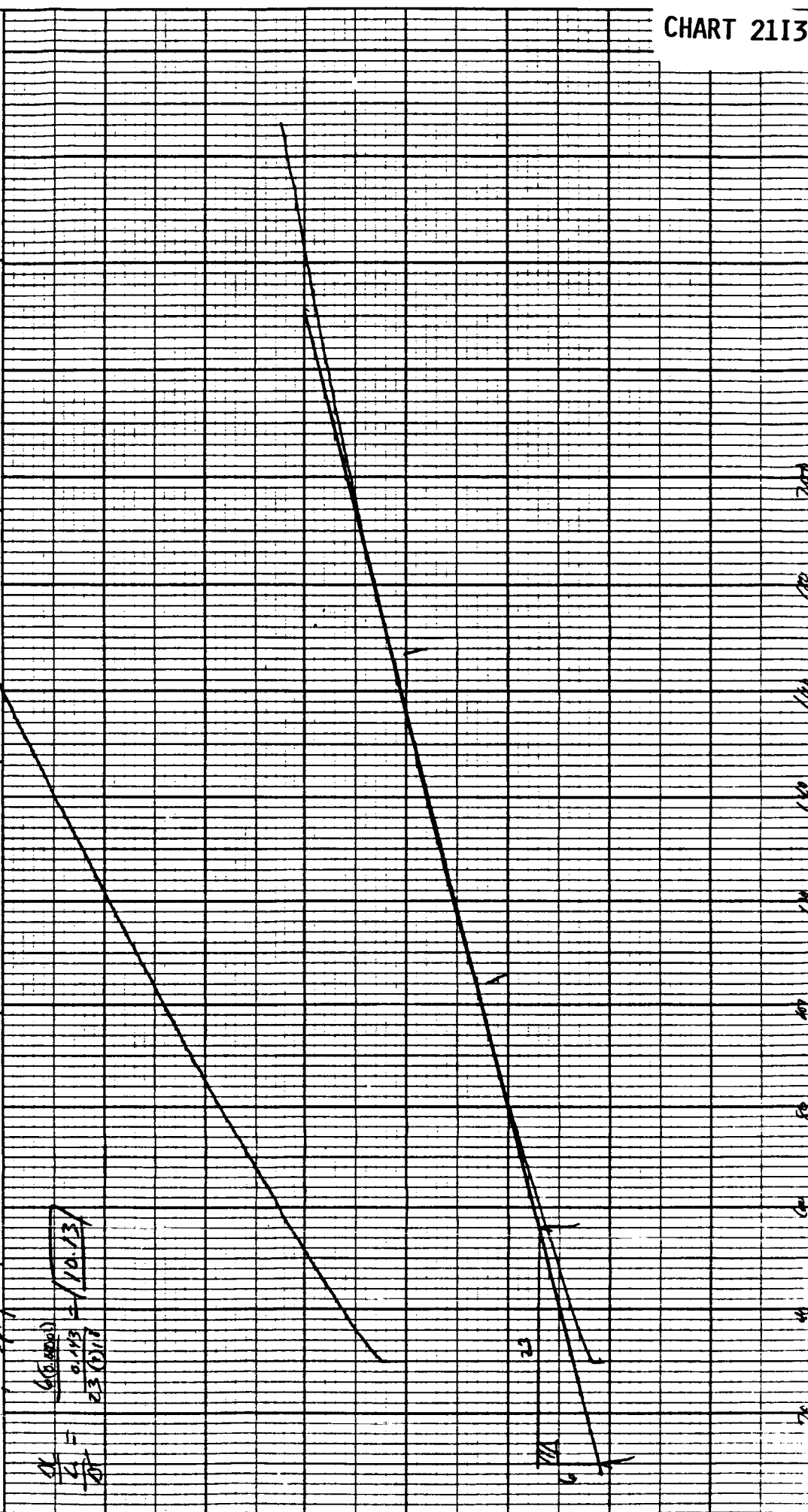


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CHART 2113

PART NO. 990088

RUN NO. <u>1015/16</u> OPERATOR <u>DP</u> SAMPLE: <u>D09256-S-57MRT-3</u> ATM <u>24</u> @ <u>87</u> FLOW RATE <u>3-5 L/min</u>	T-AXIS SCALE, °C/in. <u>50</u> PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>  </u> ISO <u>  </u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>  </u> (mcal/sec)/in. <u>  </u> WEIGHT, mg <u>  </u> REFERENCE <u>  </u>	TGA SCALE, mg/in. <u>  </u> SUPPRESSION, mg <u>  </u> WEIGHT, mg <u>  </u> TIME CONST., sec <u>  </u> dY, (mg/min)/in. <u>  </u>	TMA (μin/in) <u>  </u> SCALE, mils/in. <u>0.002</u> MODE <u>Exhaustion</u> SAMPLE SIZE <u>0.43</u> LOAD, g <u>11</u> dY, (10X), (mils/min)/in. <u>  </u>
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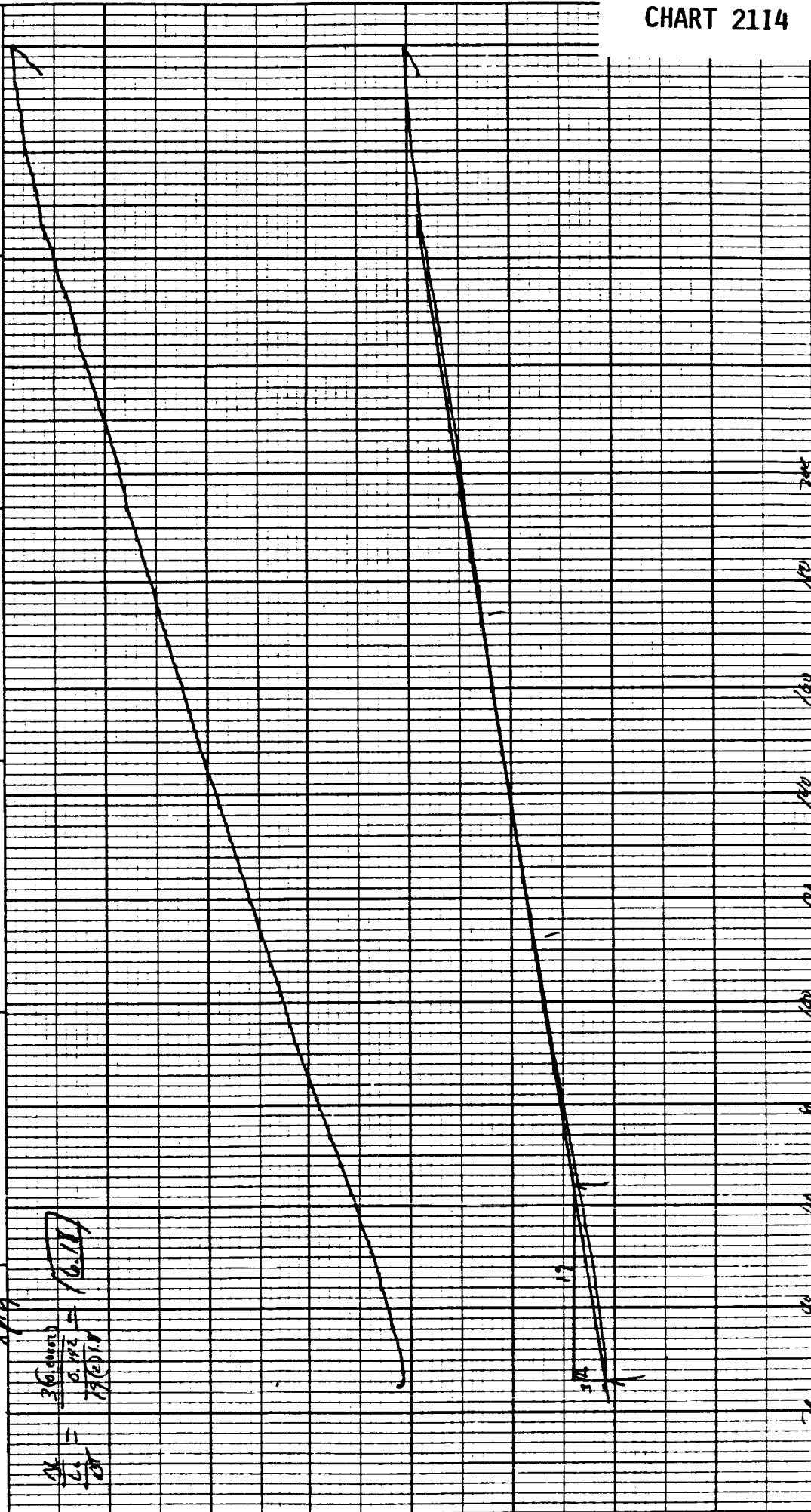


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PART NO. 990088

CHART 2114

RUN NO. <u>141516</u> OPERATOR <u>21</u> SAMPLE: <u>D09256-5-Smect-64</u> ATM. <u>44</u> @ <u>512</u> FLOW RATE <u>1-5564</u>	<b>T-AXIS</b> SCALE: °C/in. <u>50</u> 20 PROG. RATE: °C/min <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT: in. <u>0</u>	<b>DTA-DSC</b> SCALE: °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	<b>TGA</b> SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min) /in. _____	<b>TMA</b> (μm/in. °F) SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.142</u> LOAD, g <u>10</u> dY, (10X), (mils/min) /in. _____
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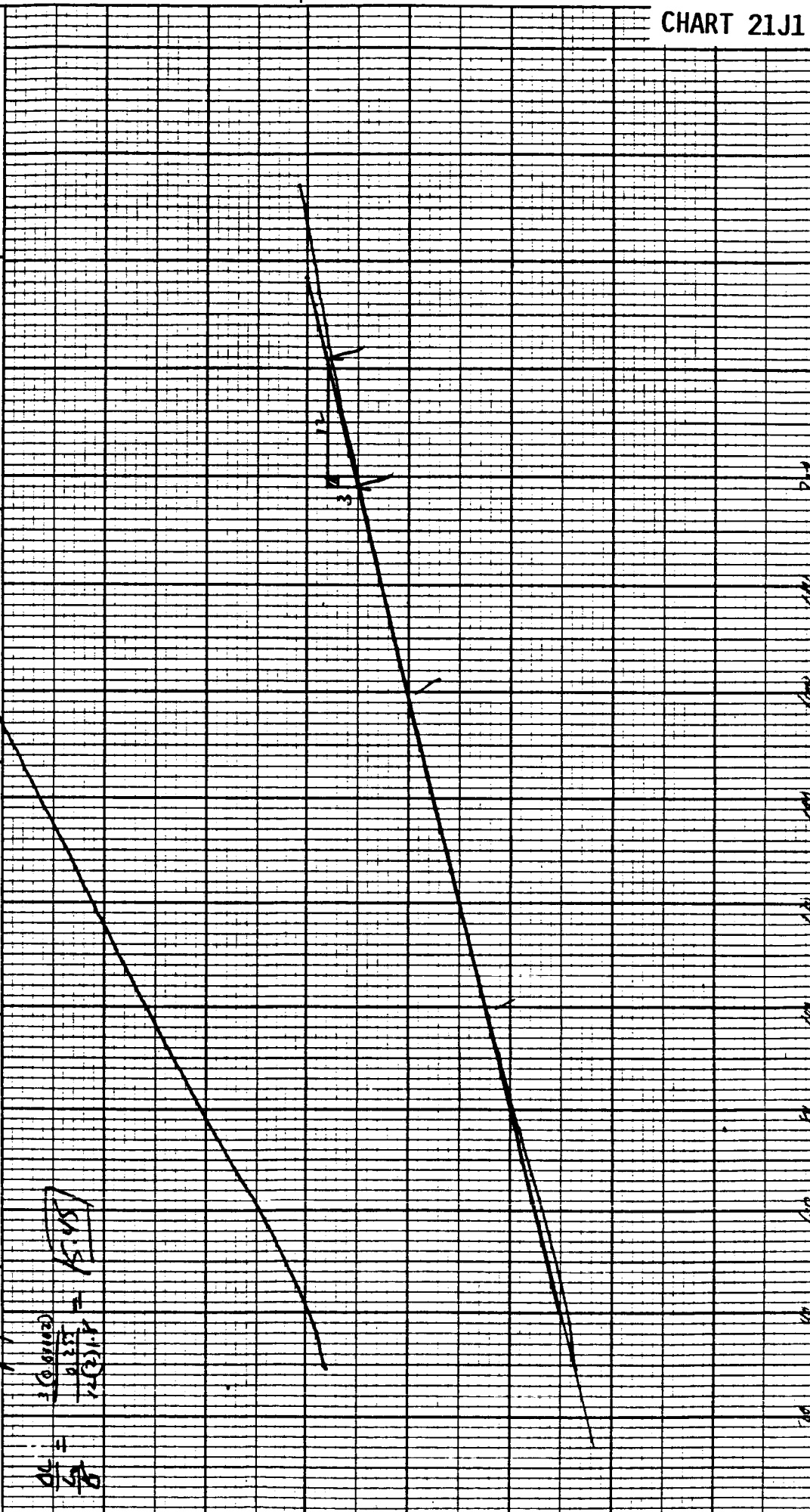


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PART NO. 990086

CHART 21J1

RUN NO. <u>1110</u> OPERATOR <u>TH</u> SAMPLE: <u>D65250-5-FA0-11</u> ATM. <u>2100</u> @ <u>570</u> FLOW RATE <u>3-5500</u>	T-AXIS SCALE, °C/in. <u>20</u> PROG. RATE, °C/min. <u>10</u> HEAT <u>✓</u> COOL <u>   </u> ISO <u>   </u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>   </u> (mcal/sec)/in. <u>   </u> WEIGHT, mg <u>   </u> REFERENCE <u>   </u>	TGA SCALE, mg/in. <u>   </u> SUPPRESSION, mg <u>   </u> WEIGHT, mg <u>   </u> TIME CONST., sec <u>   </u> dY, (mg/mg)/in. <u>   </u>	TMA <u>(mm/min)</u> SCALE, mm/in. <u>0.1/1.2</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.255</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. <u>   </u>
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PART NO. 990088

CHART 21J2

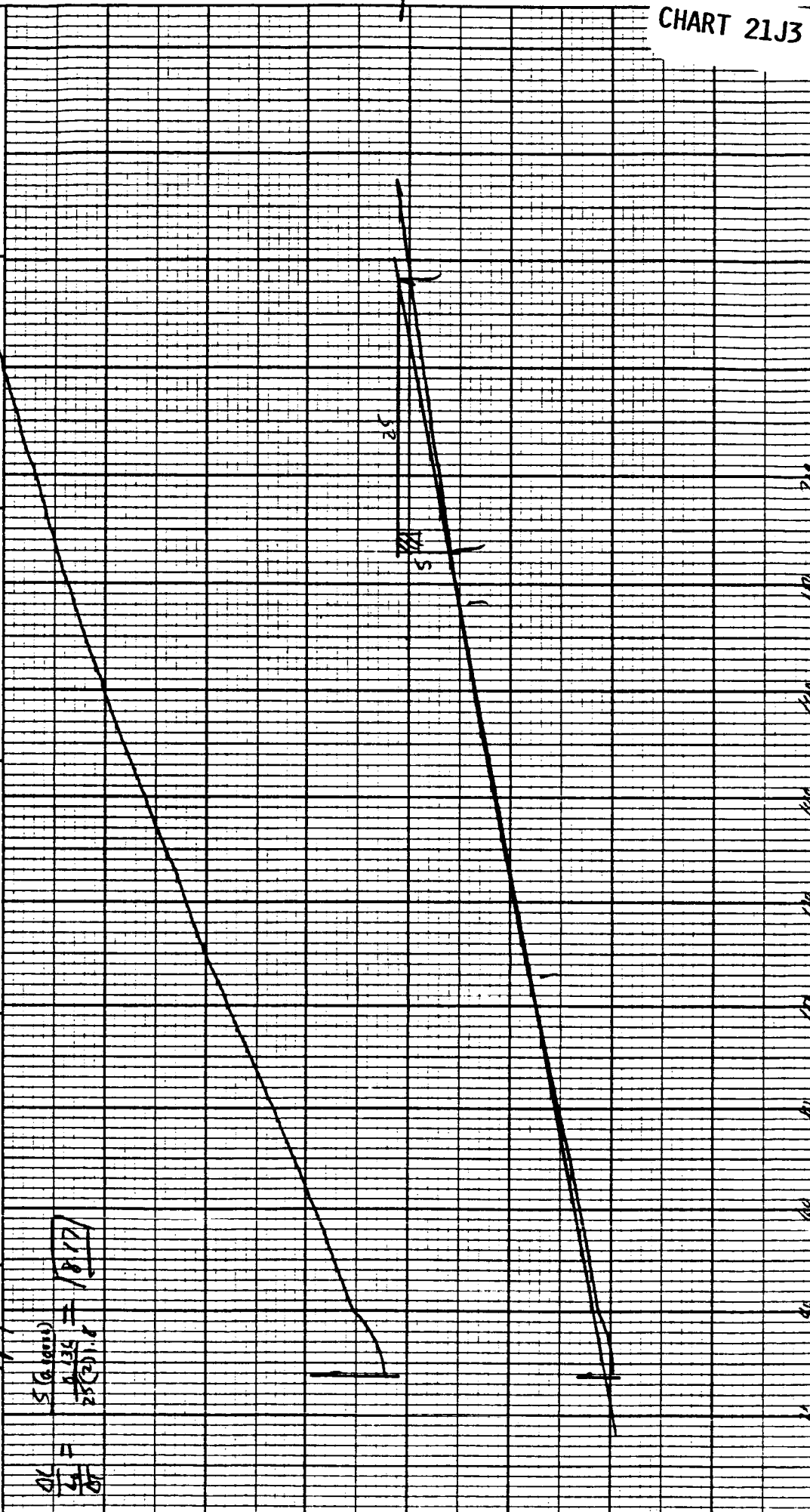
RUN NO. _____ DATE <u>11/24/66</u> OPERATOR <u>TR</u> SAMPLE: <u>D0356 - 5-6nd + 2</u> ATM <u>AN</u> @ <u>500</u> FLOW RATE <u>5-55cc</u>	<b>T-AXIS</b> SCALE, °C/in. <u>50</u> PROG. RATE, °C/min. <u>20</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	<b>DTA-DSC</b> SCALE, °C/in. (mcal/sec)/in. WEIGHT, mg REFERENCE	<b>TGA</b> SCALE, mg/in. SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	<b>TMA</b> (in./in.) SCALE, mils/in. <u>0.001</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.254</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in
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PART NO. 990088

CHART 21J3

RUN NO. <u>11/21/76</u> OPERATOR <u>DR</u> SAMPLE: <u>Dof 56 - 5-FAD - (5)</u> ATM. <u>bar</u> @ <u>570</u> FLOW RATE <u>1.5 (L/H)</u>	T-AXIS SCALE, °C/in. <u>50</u> PROG. RATE, °C/min. <u>1</u> HEAT COOL. <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg REFERENCE	TGA SCALE, mg/in. SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	TMA SCALE, mils/in. <u>0.1/0.2</u> MODE <u>Expansion</u> SAMPLE SIZE <u>0.136</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in
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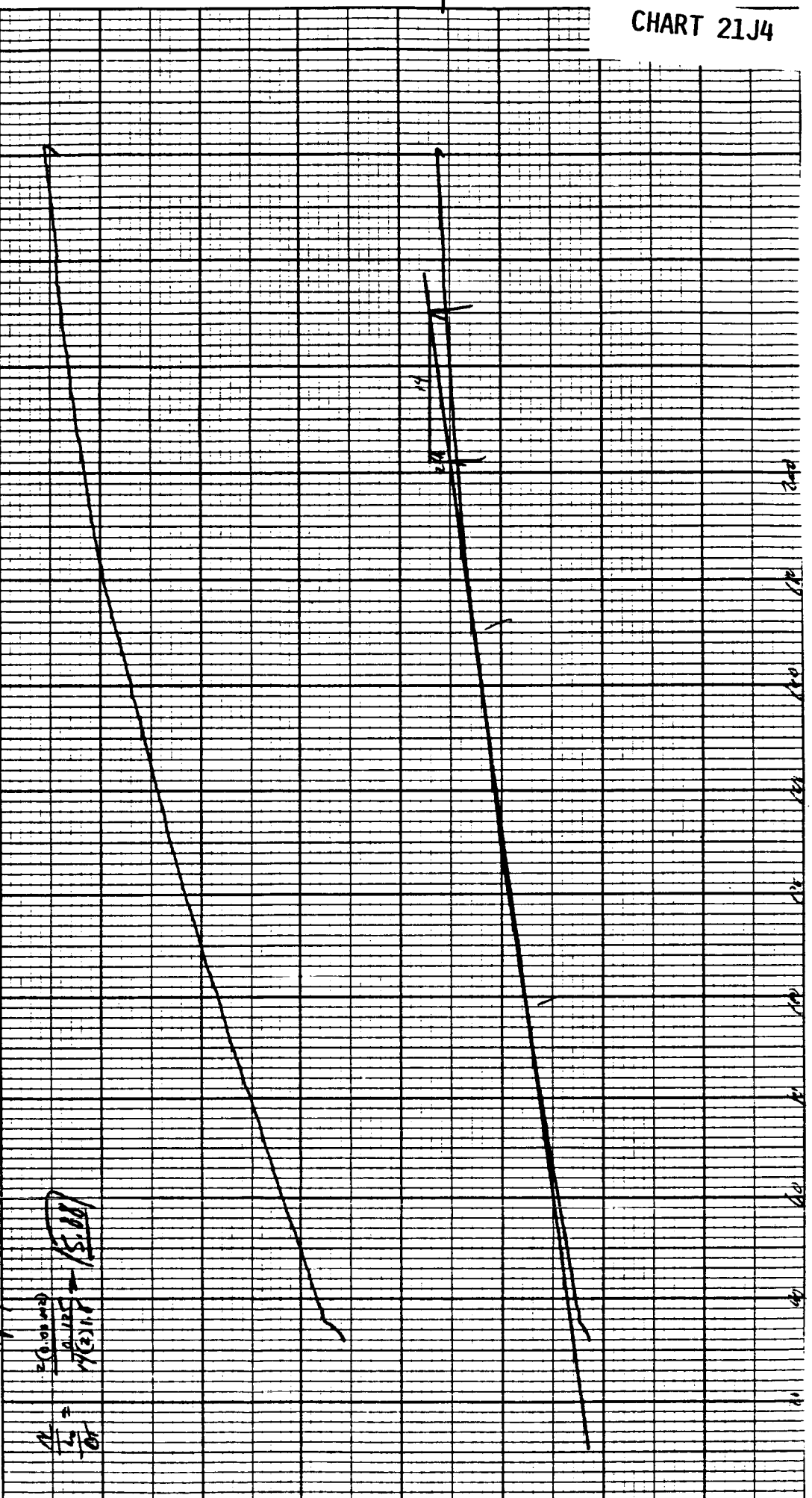


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OF 8022 QUALITY

CHART 21J4

PART NO. 990088

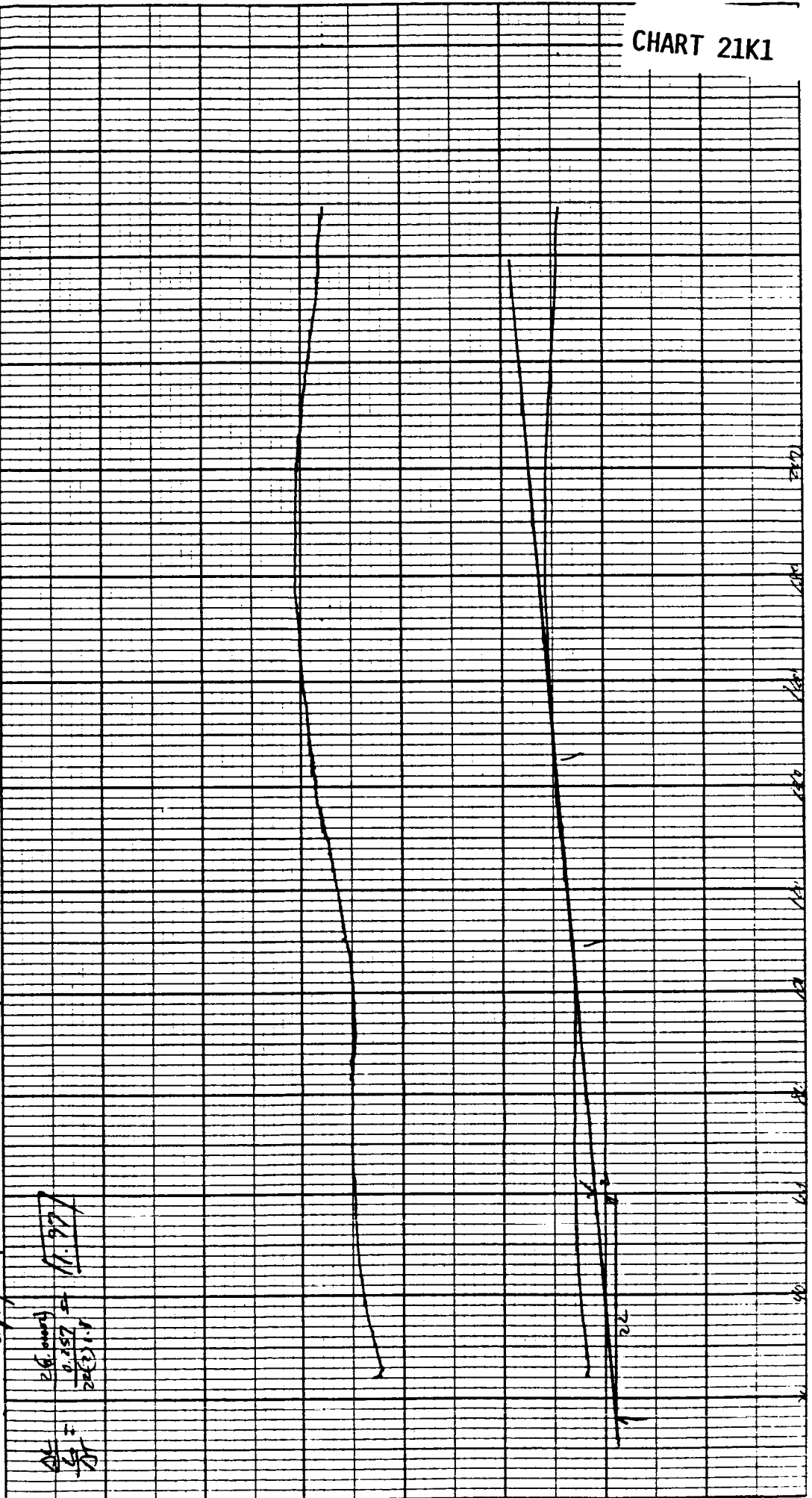
RUN NO. <u>141110</u> OPERATOR <u>DL</u> SAMPLE <u>D09256-S-PAD-41</u> ATM <u>Am</u> @ <u>570</u> FLOW RATE <u>3.0-5.188</u>	T-AXIS SCALE, °C/in <u>20</u> PROG. RATE, °C/min <u>20</u> HEAT COOL ISO SHIFT in <u>0</u>	DTA-DSC SCALE, °C/in (mcal/sec)/in WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	TMA SCALE, miles/in <u>0.2</u> MODE <u>EXANSION</u> SAMPLE SIZE <u>0.135</u> LOAD, g <u>14</u> dY, (10X), (miles/min)/in
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OF POOR QUALITY

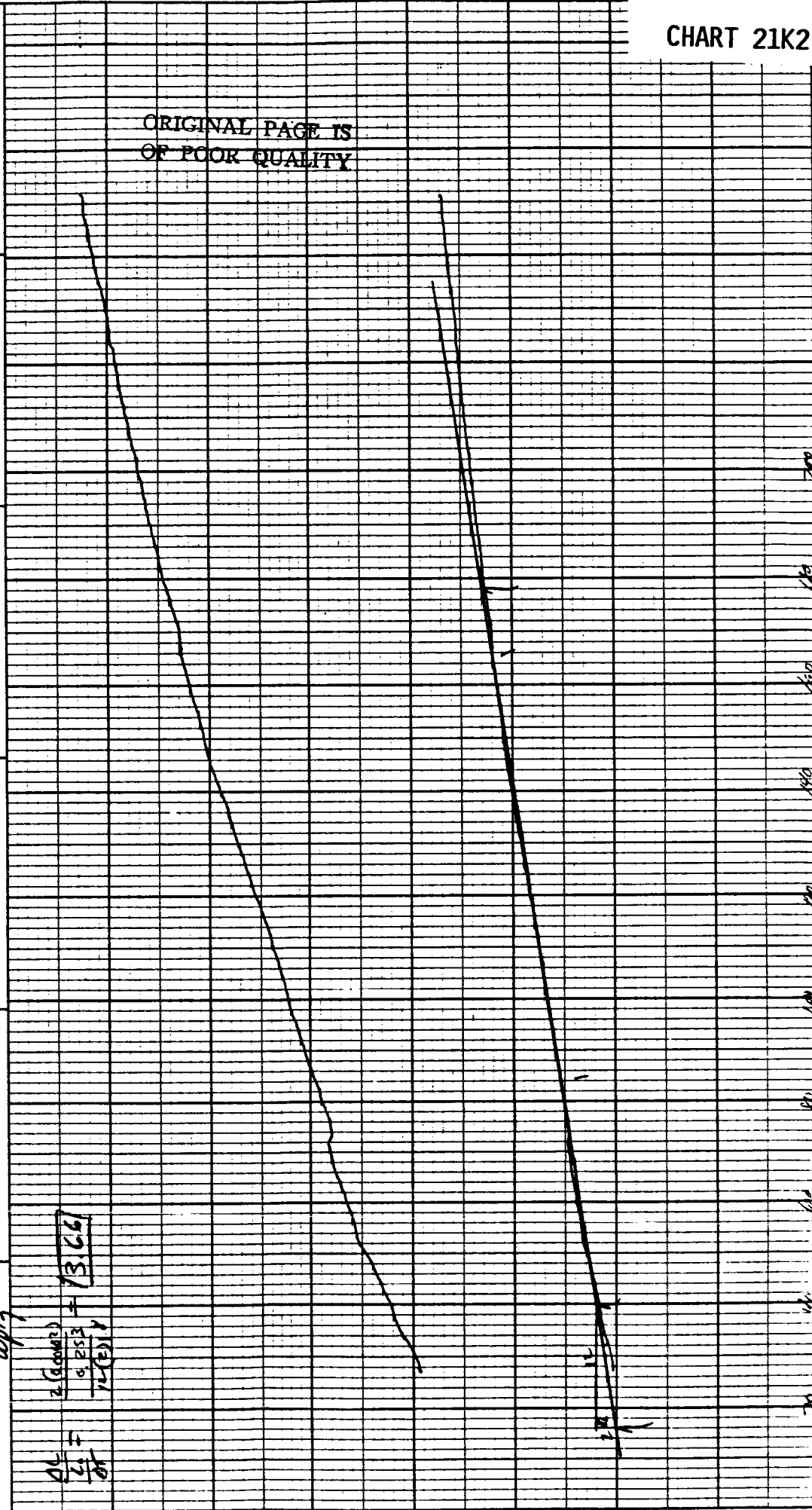
PART NO. 990088

RUN NO. _____ DATE <u>10/10/86</u>	T-AXIS SCALE, °C/in. <u>50/20</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec. _____ dY, (mg/min)/in. _____	TMA (µin/in-F) SCALE, mils/in. <u>0.1/0.2</u>	_____
OPERATOR <u>TD</u>	PROG. RATE, °C/min <u>10</u>	WEIGHT, mg _____	_____	MODE <u>Exhaust</u>	_____
SAMPLE: <u>D09256-6-5ANR-(1)</u>	HEAT <input checked="" type="checkbox"/> COOL <input type="checkbox"/> ISO _____	REFERENCE _____	_____	SAMPLE SIZE <u>0.257</u>	_____
ATM <u>air</u> @ <u>500</u>	SHIFT, in. <u>0</u>	_____	_____	LOAD, g <u>10</u>	_____
FLOW RATE <u>3-55SLH</u>	_____	_____	_____	dY, (10X), (mils/min)/in. _____	_____

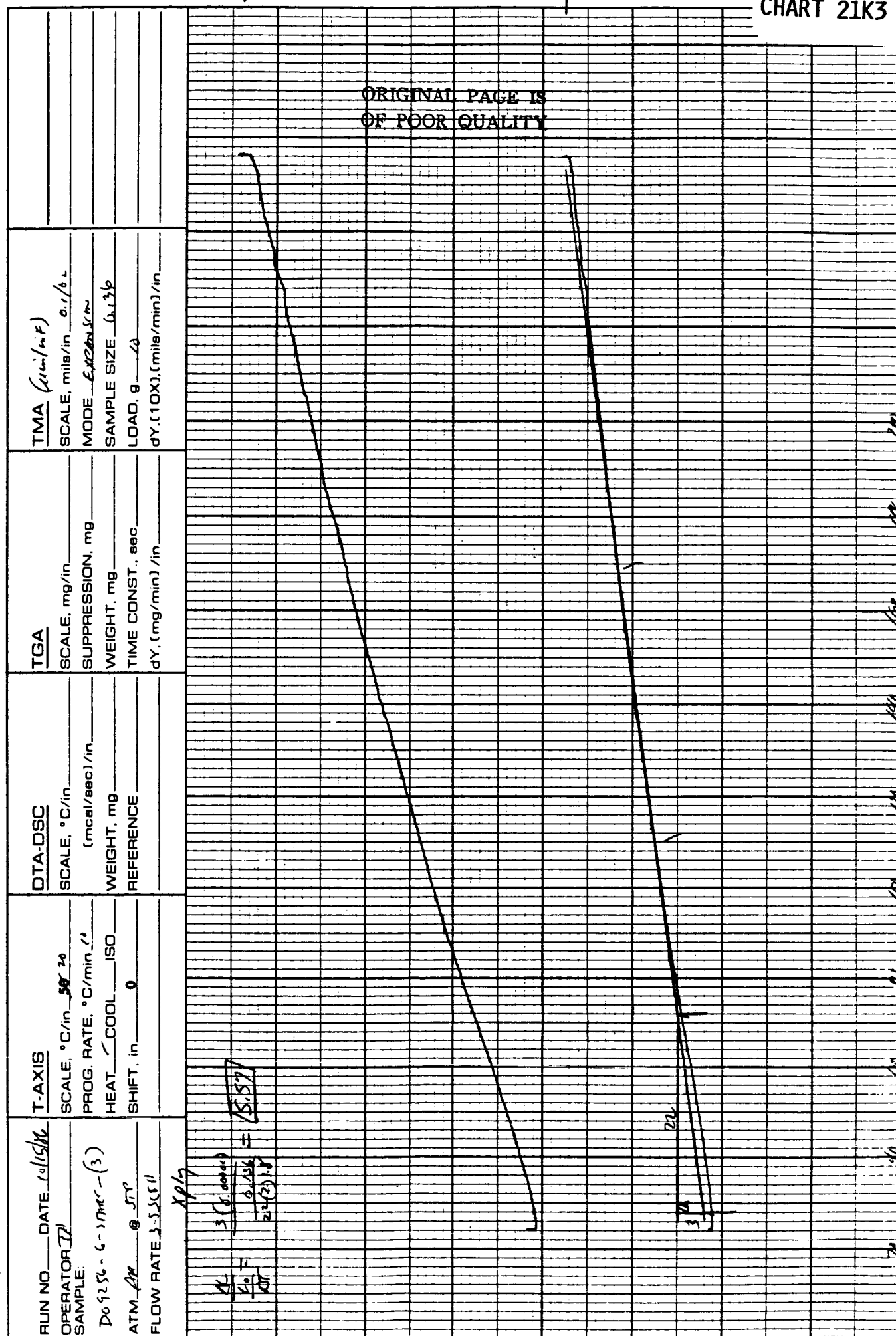


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<p>RUN NO. _____ DATE <u>10/10/80</u></p> <p>OPERATOR <u>JD</u></p> <p>SAMPLE: <u>D09256-6-SPART-(2)</u></p> <p>ATM. AIR @ <u>SD</u></p> <p>FLOW RATE <u>3.5XFL</u></p>	<p><b>T-AXIS</b></p> <p>SCALE, °C/in. <u>50/20</u></p> <p>PROG. RATE, °C/min <u>10</u></p> <p>HEAT <u>COOL</u> ISO</p> <p>SHIFT, in. <u>0</u></p>	<p><b>DTA-DSC</b></p> <p>SCALE, °C/in. _____</p> <p>(mcal/sec)/in. _____</p> <p>WEIGHT, mg _____</p> <p>REFERENCE _____</p>	<p><b>TGA</b></p> <p>SCALE, mg/in. _____</p> <p>SUPPRESSION, mg _____</p> <p>WEIGHT, mg _____</p> <p>TIME CONST., sec _____</p> <p>dY, (mg/min)/in. _____</p>	<p><b>TMA</b> <u>(µin/µinF)</u></p> <p>SCALE, mils/in. <u>0.1/0.2</u></p> <p>MODE <u>EXOTHERM</u></p> <p>SAMPLE SIZE <u>0.253</u></p> <p>LOAD, g <u>10</u></p> <p>dY, (10X), (mils/min)/in. _____</p>
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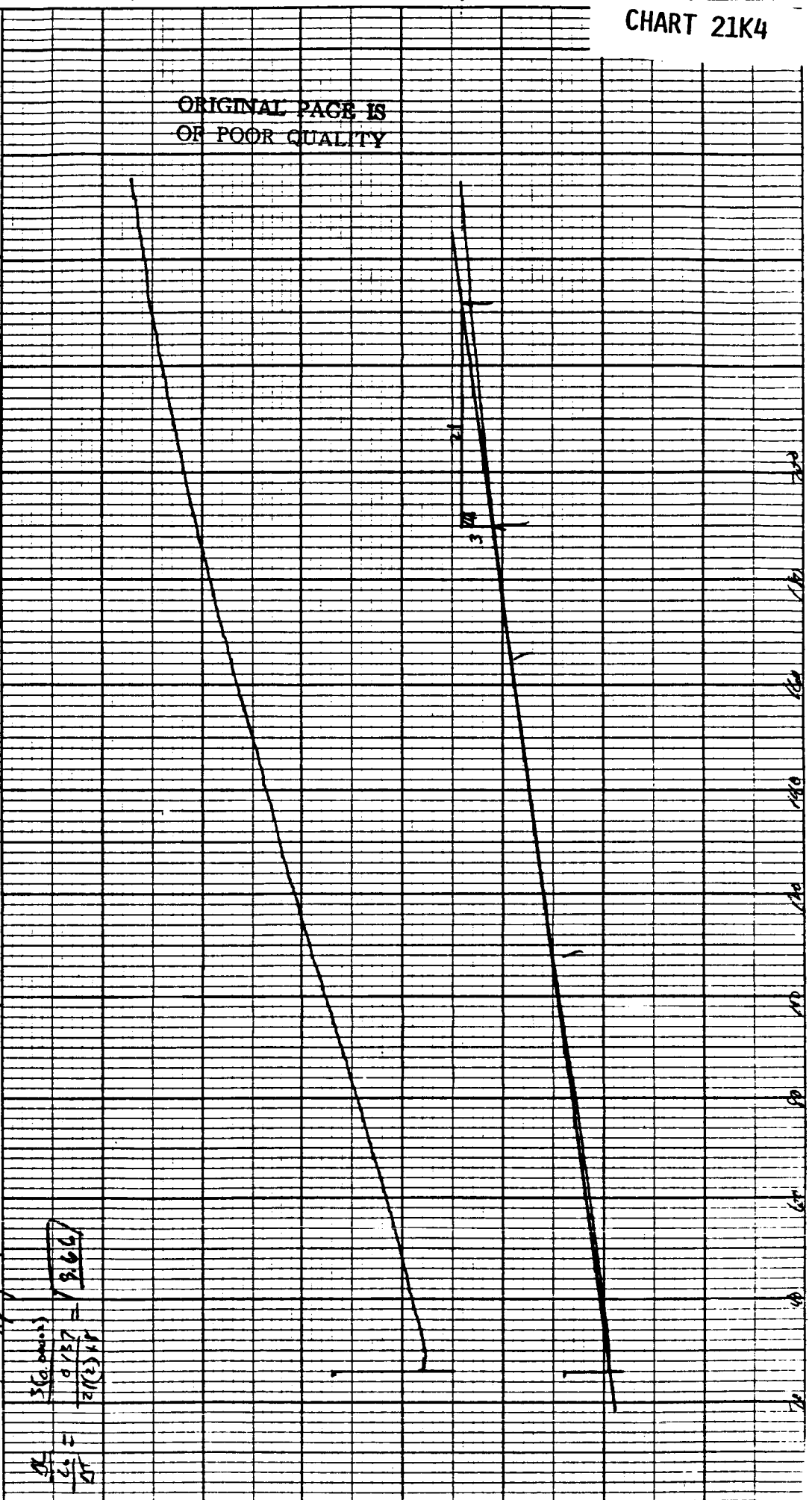
PART NO. 990088





PART NO. 990086

RUN NO. <u>DATE 10/1/82</u> OPERATOR <u>AT</u> SAMPLE: <u>DO 5256 - 6-57801-41</u> ATM <u>200</u> @ <u>500</u> FLOW RATE <u>3-5 L/min</u>	T-AXIS SCALE, °C/in <u>50</u> 2° PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in (mcal/sec)/in WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	TMA (um/in) SCALE, mils/in <u>0.1/0.2</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.137</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in
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PART NO. 990088

RUN NO. <u>1111</u> OPERATOR <u>TH</u> SAMPLE: <u>D09256-6-6M-1</u> ATM. <u>6A</u> @ <u>570</u> FLOW RATE <u>3-53</u> (ps)	T-AXIS SCALE, °C/in. <u>30</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg REFERENCE	TGA SCALE, mg/in. SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min) / in.	TMA <u>(in/in)</u> SCALE, mile/in. <u>0.1/0.2</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.257</u> LOAD, g <u>10</u> dY, (10X) (mile/min) / in.
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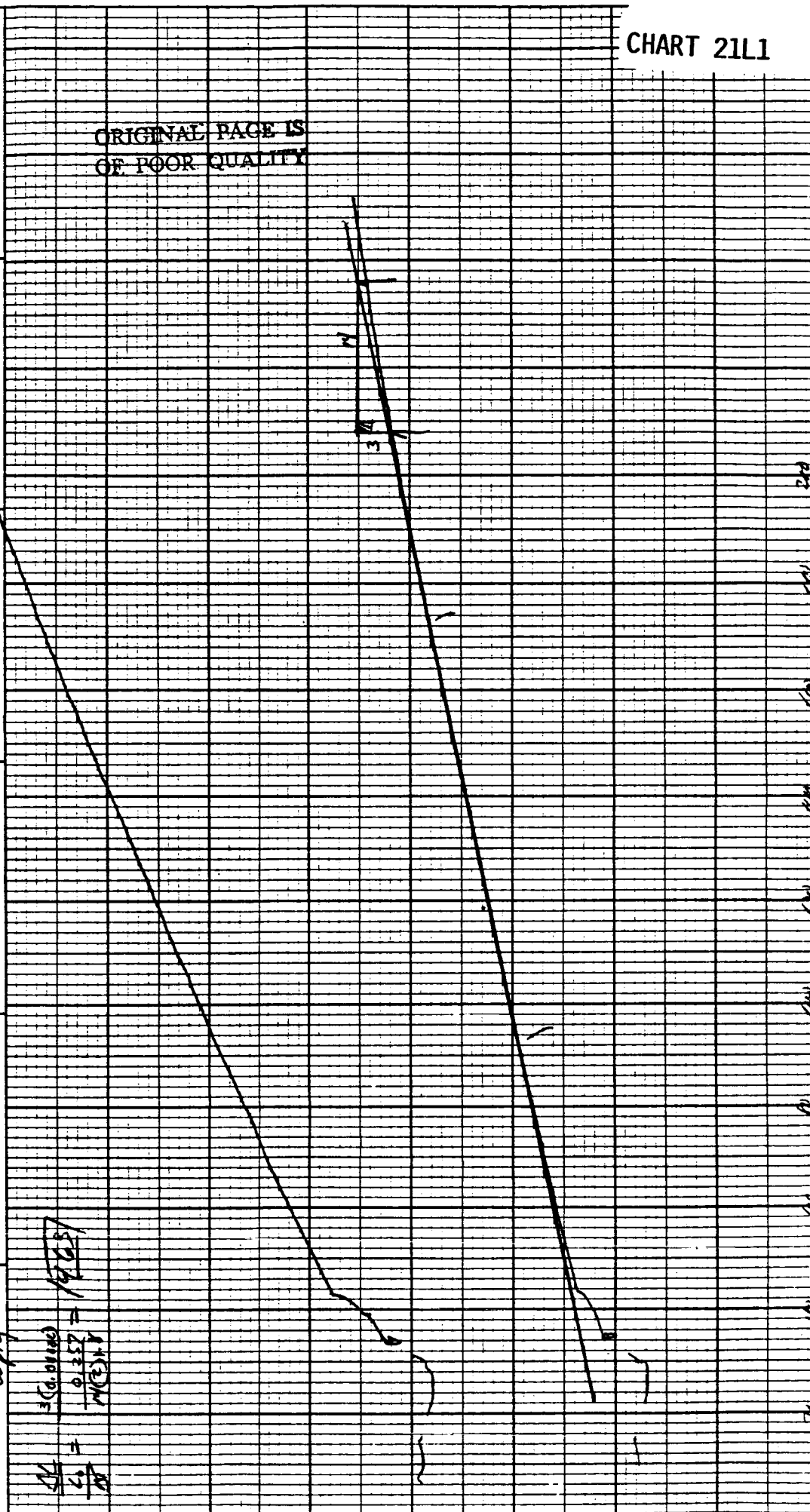
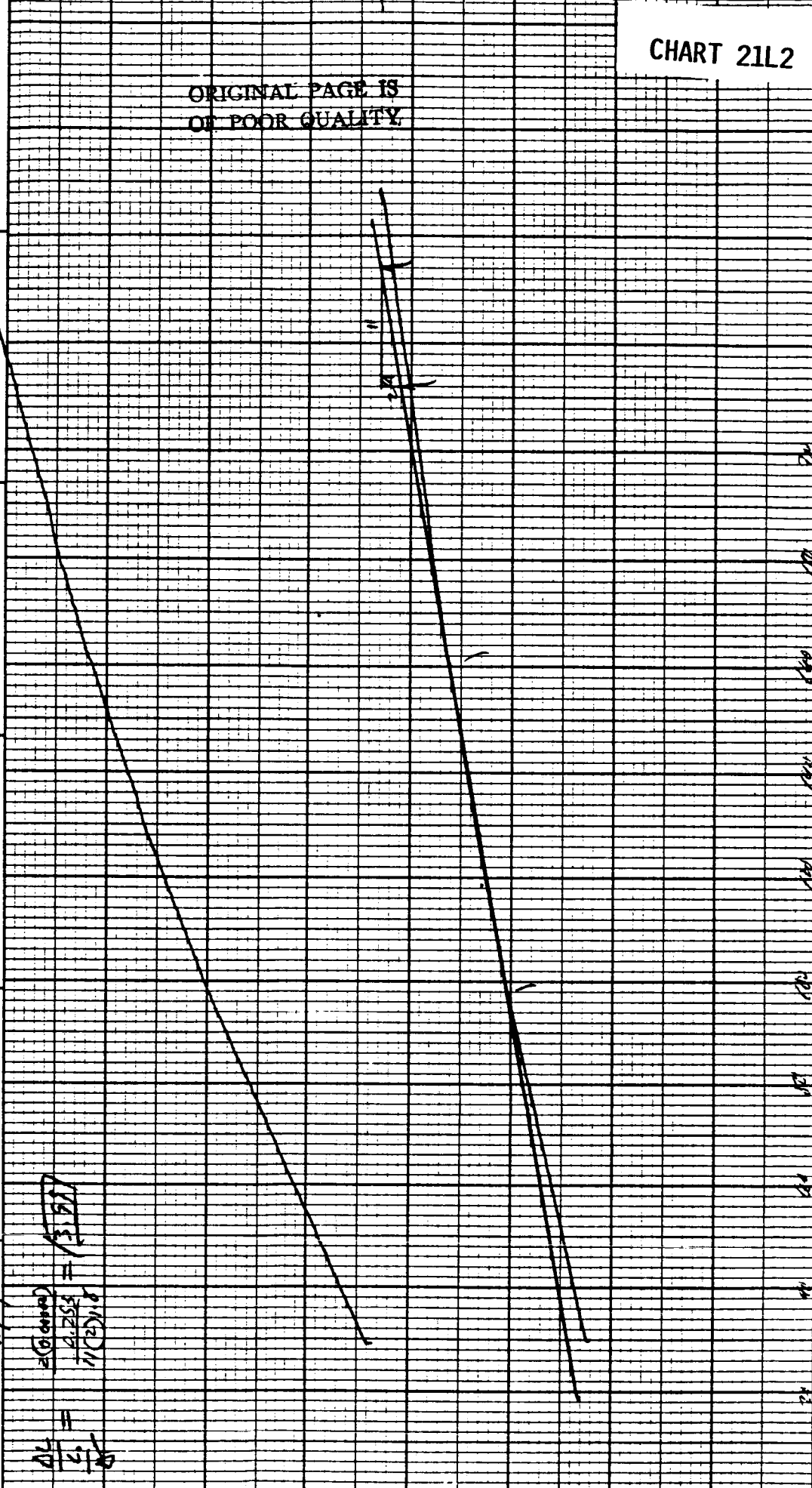


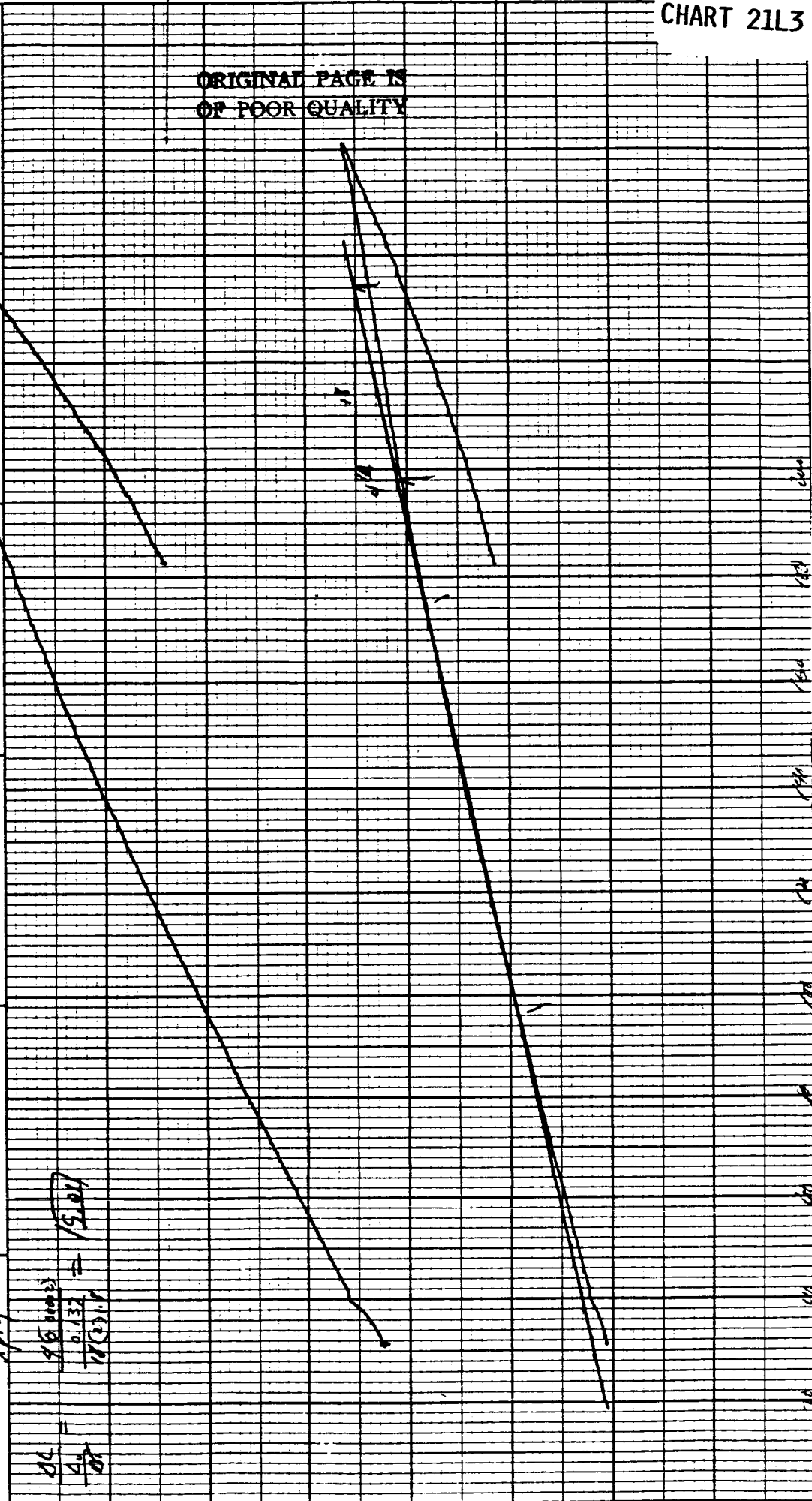
CHART 21L1

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RUN NO. _____ DATE <u>7/2/74</u> OPERATOR <u>JD</u> SAMPLE: <u>DO9256-6-END-(2)</u> ATM <u>AM</u> @ <u>500</u> FLOW RATE <u>3-1514</u>	T-AXIS SCALE, °C/in. <u>50-75</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in _____	TMA (min/min) SCALE, mils/in <u>0.1/0.2</u> MODE <u>EXENSION</u> SAMPLE SIZE <u>0.253</u> LOAD, g <u>24</u> dY, (10X), (mils/min)/in _____
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RUN NO. <u>111514</u> OPERATOR <u>PT</u> SAMPLE: <u>D09256-6 END (3)</u> ATM. <u>EN</u> @ <u>JIT</u> FLOW RATE <u>3-53.64</u>	T-AXIS SCALE, °C/in. <u>20</u> PROG. RATE, °C/min. <u>2</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in.</u> WEIGHT, mg <u>REFERENCE</u>	TGA SCALE, mg/in. <u>10</u> SUPPRESSION, mg <u>10</u> WEIGHT, mg <u>10</u> TIME CONST., sec <u>10</u> dY, (mg/min)/in. <u>10</u>	TMA <u>in/in/in</u> SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.137</u> LOAD, g <u>10</u> dY (10X), (mils/min)/in. <u>10</u>
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$$\frac{dL}{dY} = \frac{16.0000}{0.137} = 116.79$$

PART NO. 990088

RUN NO. <u>11516</u> OPERATOR <u>PT</u> SAMPLE: <u>D09254 - 6 - (IND - H)</u> ATM <u>LN</u> @ <u>STP</u> FLOW RATE <u>1.55 L/min</u>	T-AXIS SCALE: °C/in. <u>50</u> PROG. RATE: °C/min <u>20</u> HEAT <u>COOL</u> <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE: °C/in. <u>10</u> (mcal/sec)/in. WEIGHT, mg REFERENCE	TGA SCALE, mg/in. SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	TMA (µm/in) SCALE, mils/in. <u>0.1/6.2</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.31</u> LOAD, g <u>10</u> dY, (10X) mils/min/in
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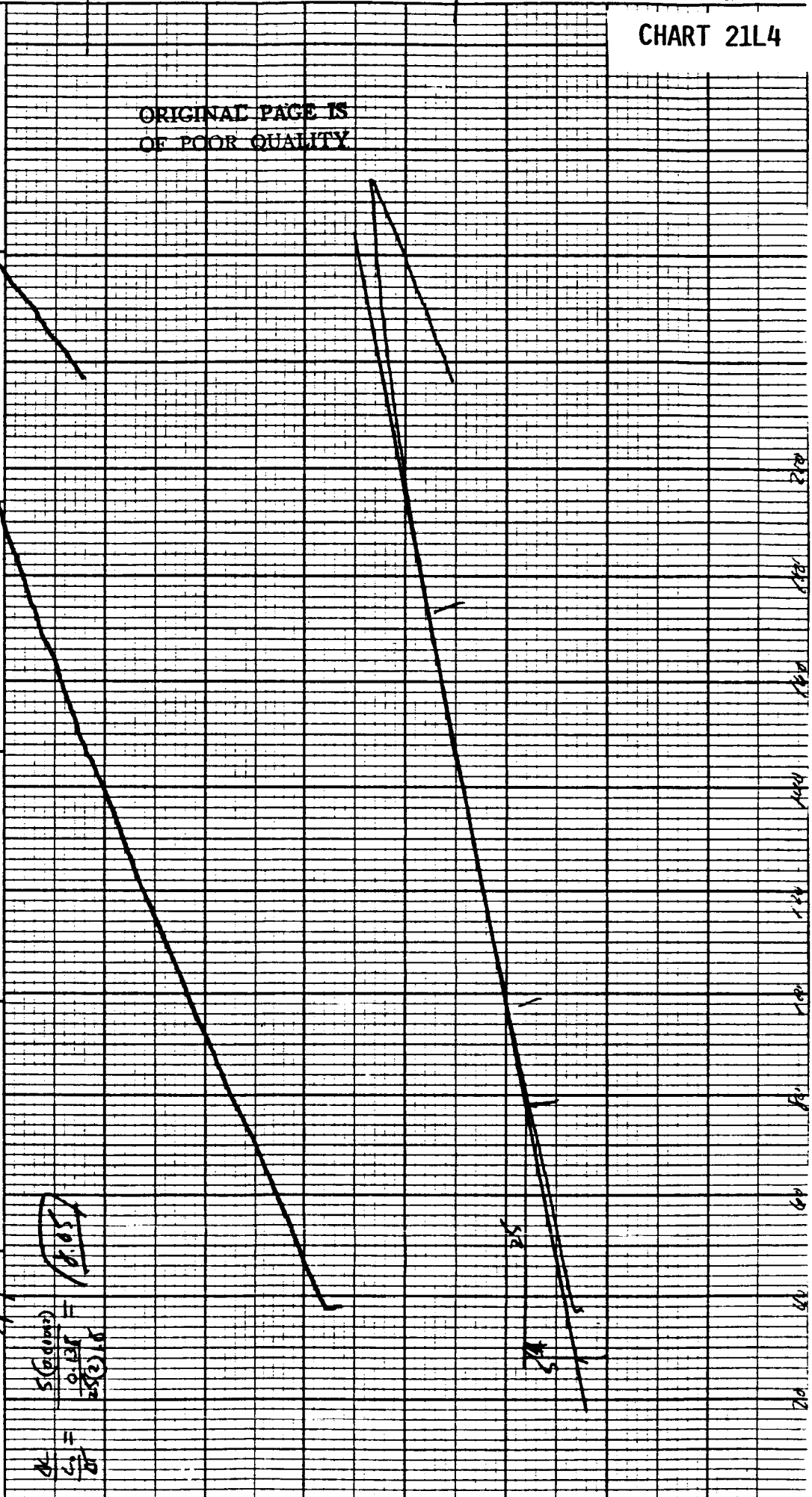
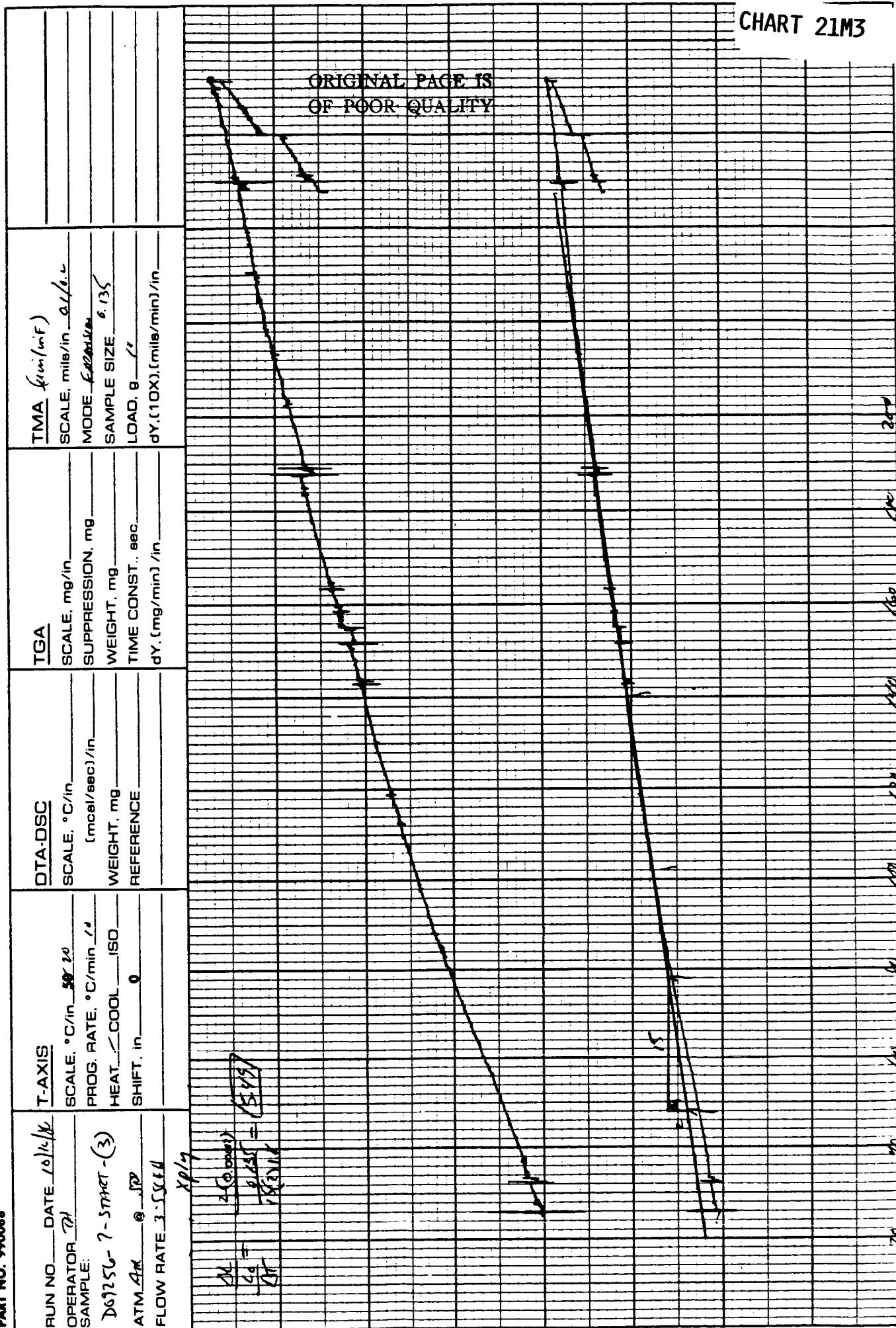


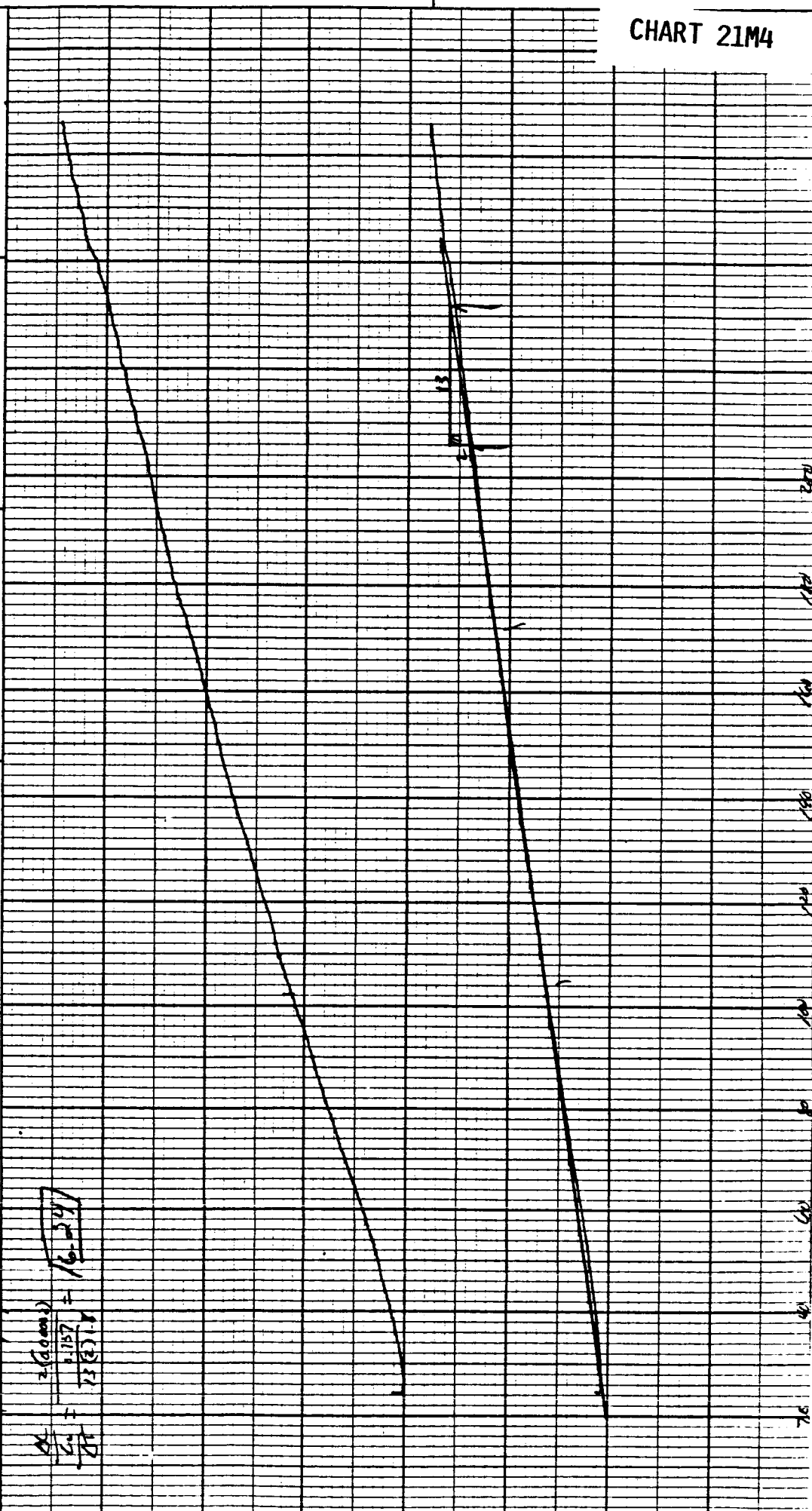
CHART 21L4



PART NO. 990088

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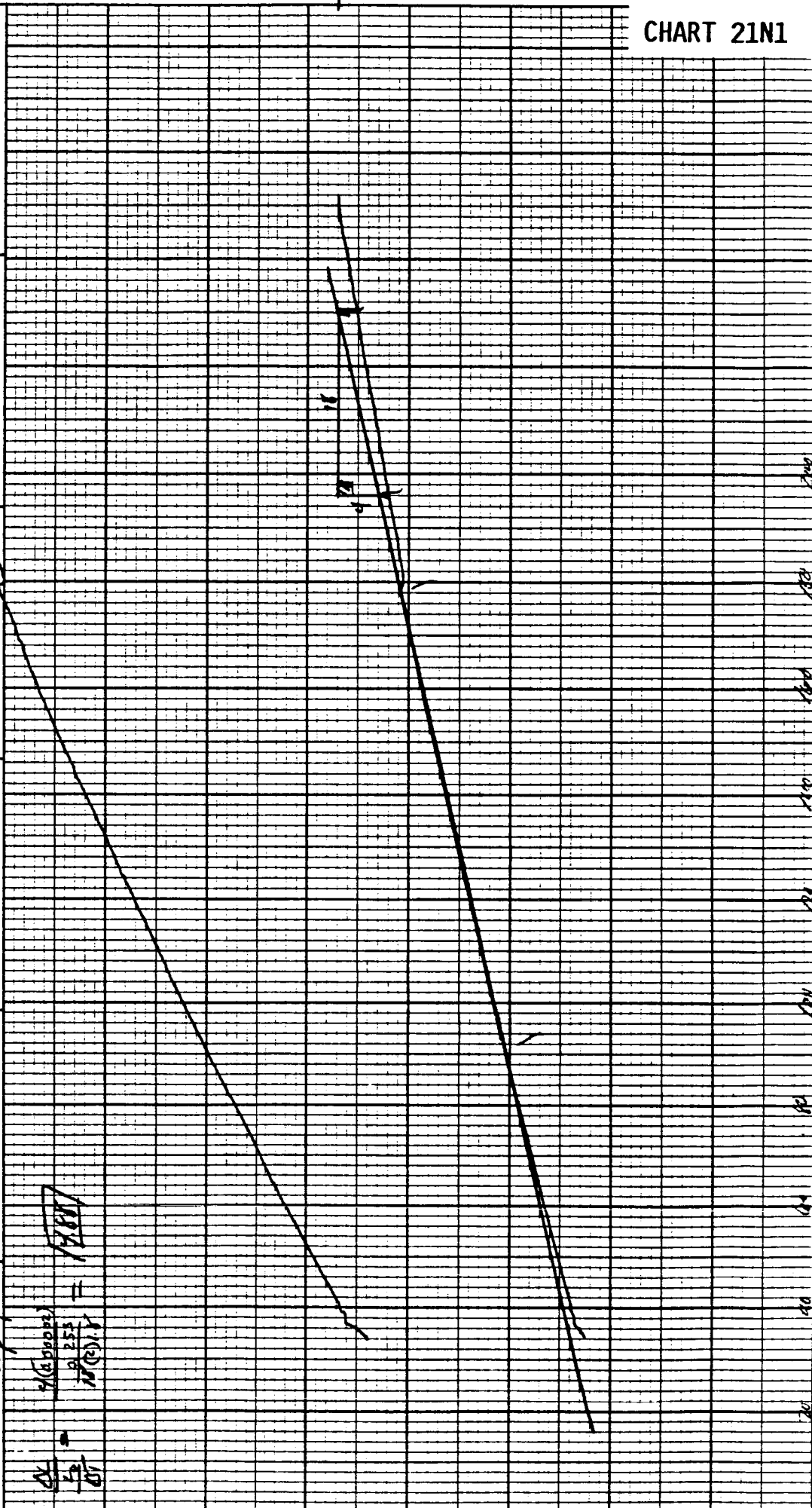
RUN NO. <u>1016186</u> OPERATOR <u>71</u> SAMPLE: <u>DO 9256-7-START - (4)</u> ATM. <u>AA</u> @ <u>500</u> FLOW RATE <u>3.5 SLCA</u>	T-AXIS SCALE, °C/in. <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	TMA <u>(µin/in·°F)</u> SCALE, mils/in <u>0.1/0.2</u> MODE <u>EXPAN/CON</u> SAMPLE SIZE <u>0.137</u> LOAD, g <u>1</u> dY, (10X), (mils/min)/in
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PART NO. 990088

RUN NO. _____ OPERATOR <u>TP</u> SAMPLE: <u>Do 256-7-End-(1)</u> ATM. <u>410</u> @ <u>370</u> FLOW RATE <u>3.57</u> d <u>uply</u>	T-AXIS SCALE, °C/in. <u>20</u> PROG. RATE, °C/min <u>20</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA <u>6.1</u> in/in SCALE, miles/in. <u>0.1/0.2</u> MODE <u>EX-240/120</u> SAMPLE SIZE <u>0.253</u> LOAD, g <u>70</u> dY, (10X), (mils/min)/in. _____
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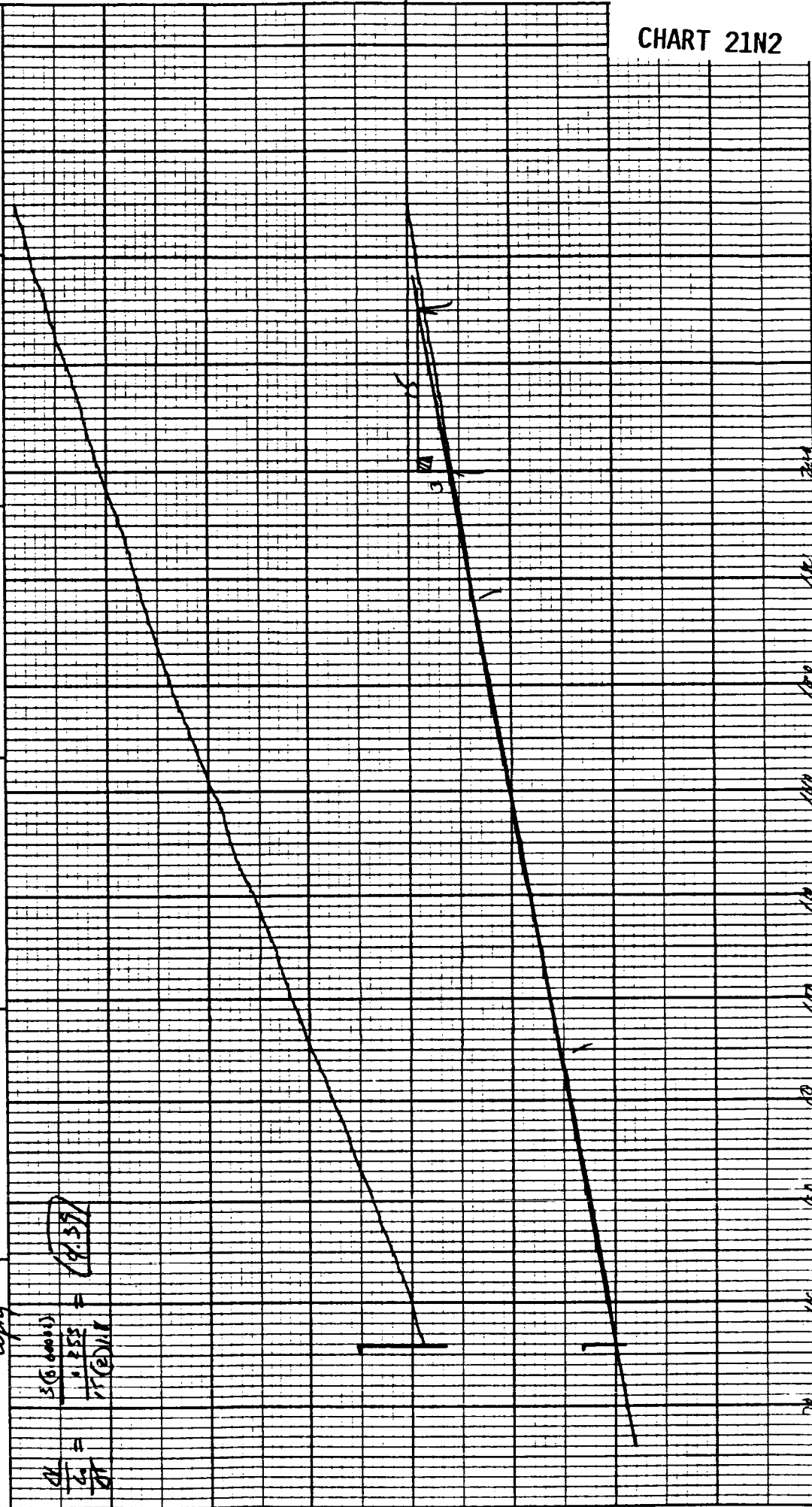




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ART NO. 990088

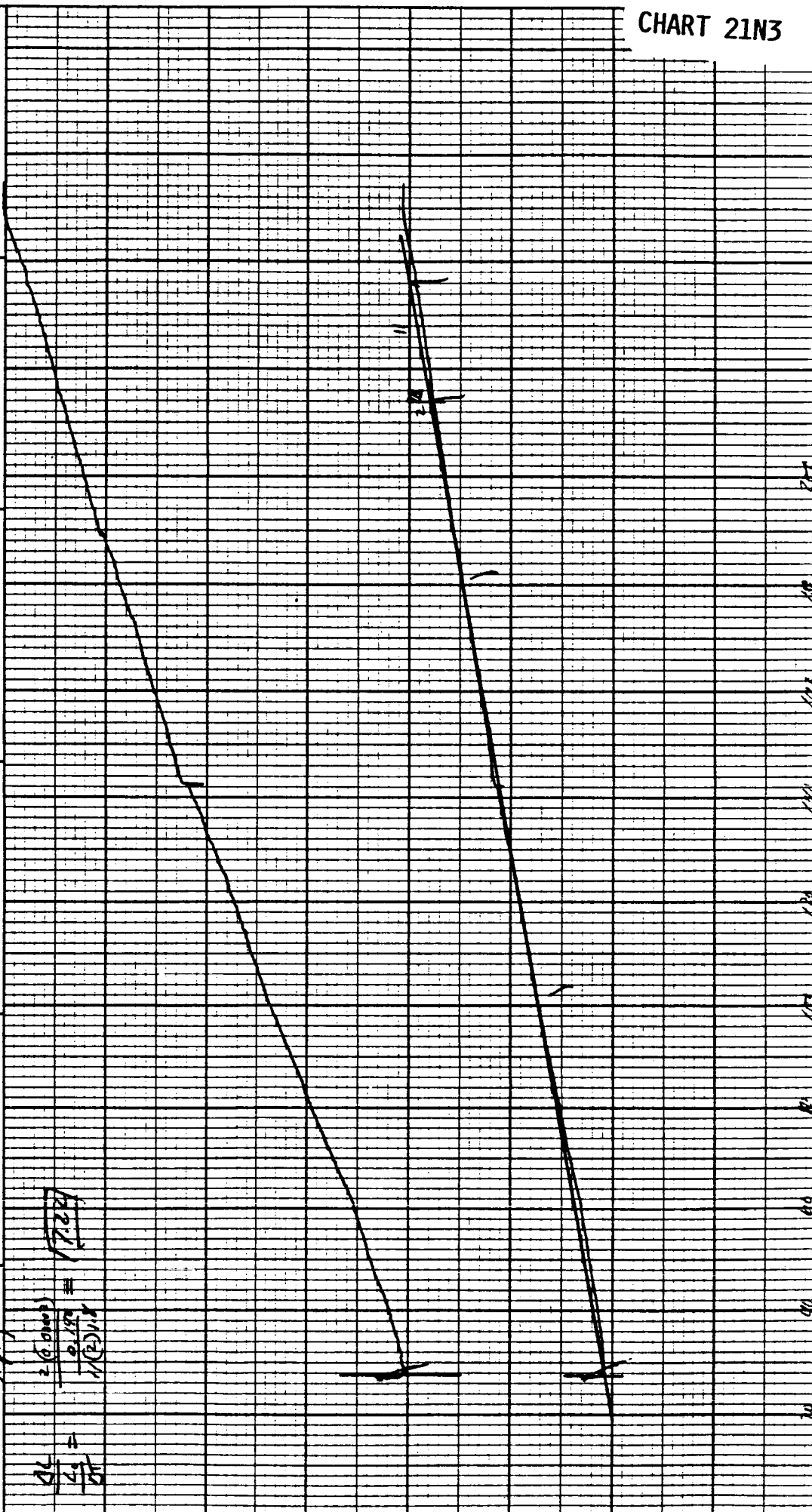
RUN NO. <u>1114</u> OPERATOR <u>DI</u> SAMPLE <u>D04236-7-(2nd)-(2)</u> ATM. <u>SEA</u> @ <u>SP</u> FLOW RATE <u>3-55 CPM</u>	T-AXIS SCALE, °C/in <u>50</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in <u>50</u> (mcal/sec)/in WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	TMA (mm/min) SCALE, mils/in <u>0.1/0.2</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.253</u> LOAD, g <u>1</u> dY, (10X), (mils/min)/in
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PART NO. 990088

RUN NO. <u>DATE 11/2/86</u> OPERATOR <u>TD</u> SAMPLE: <u>Do 9256-7-1540 - (3)</u> ATM. <u>600</u> @ <u>570</u> FLOW RATE <u>3.55 CC/H</u>	T-AXIS SCALE °C/in <u>50</u> 2° PROG. RATE °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT in <u>0</u>	DTA-DSC SCALE °C/in <u>50</u> (mcal/sec)/in WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	TMA SCALE, mils/in <u>0.16</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.146</u> LOAD, g <u>1</u> dY, (10X), (mils/min)/in
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CHART 21N4

PART NO. 990088

RUN NO. 1114  
 OPERATOR 12  
 SAMPLE: D01256-7-60-4  
 ATM Ca @ 570  
 FLOW RATE 3-11.5

T-AXIS

SCALE, °C/in. 20  
 PROG. RATE, °C/min 10  
 HEAT / COOL ISO  
 SHIFT, in. 0

DTA-DSC

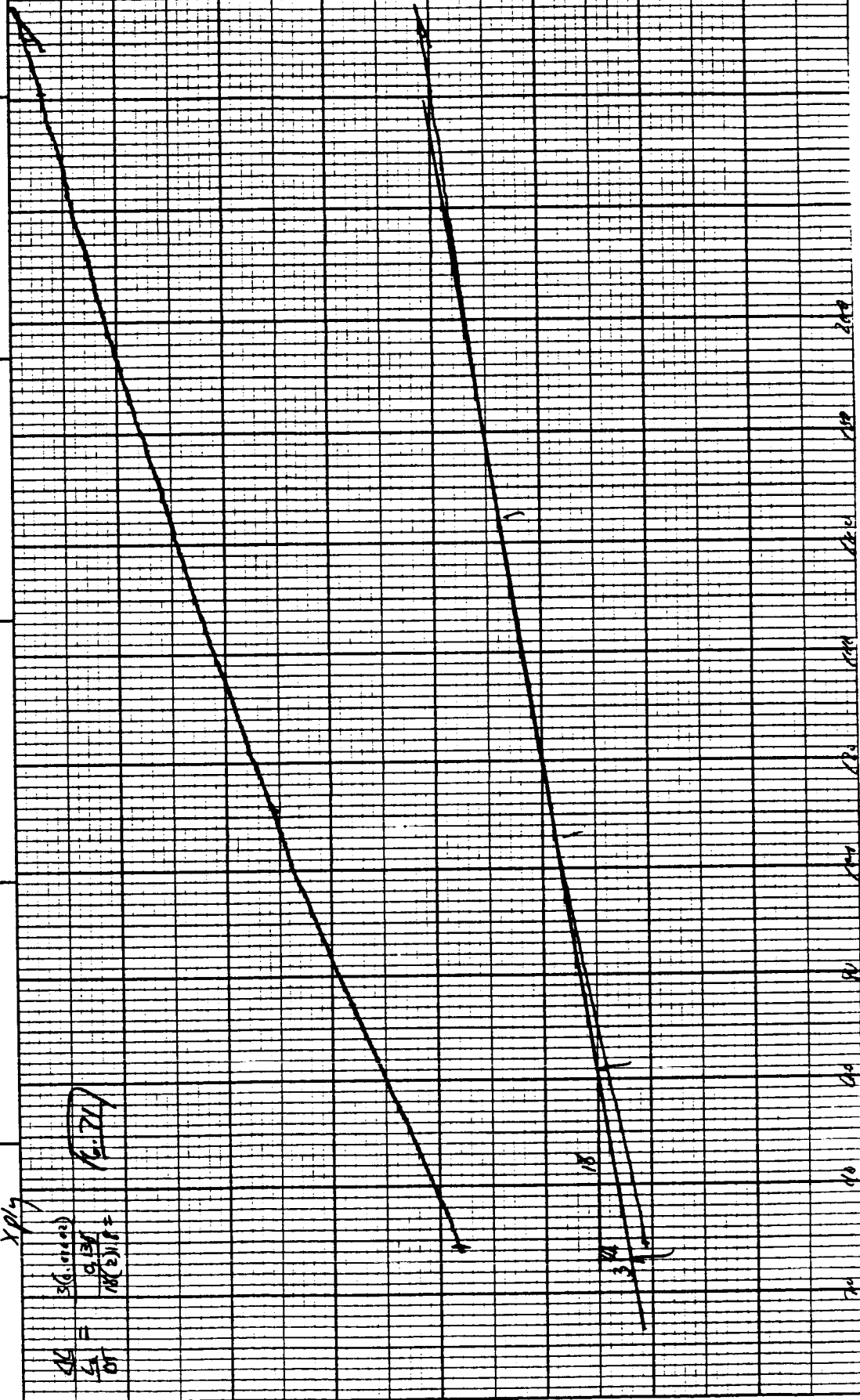
SCALE, °C/in. (mcal/sec)/in  
 WEIGHT, mg   
 REFERENCE

TGA

SCALE, mg/in.   
 SUPPRESSION, mg   
 WEIGHT, mg   
 TIME CONST., sec.   
 dY, (mg/min) / in.

TMA (g/in./in.<sup>2</sup>)

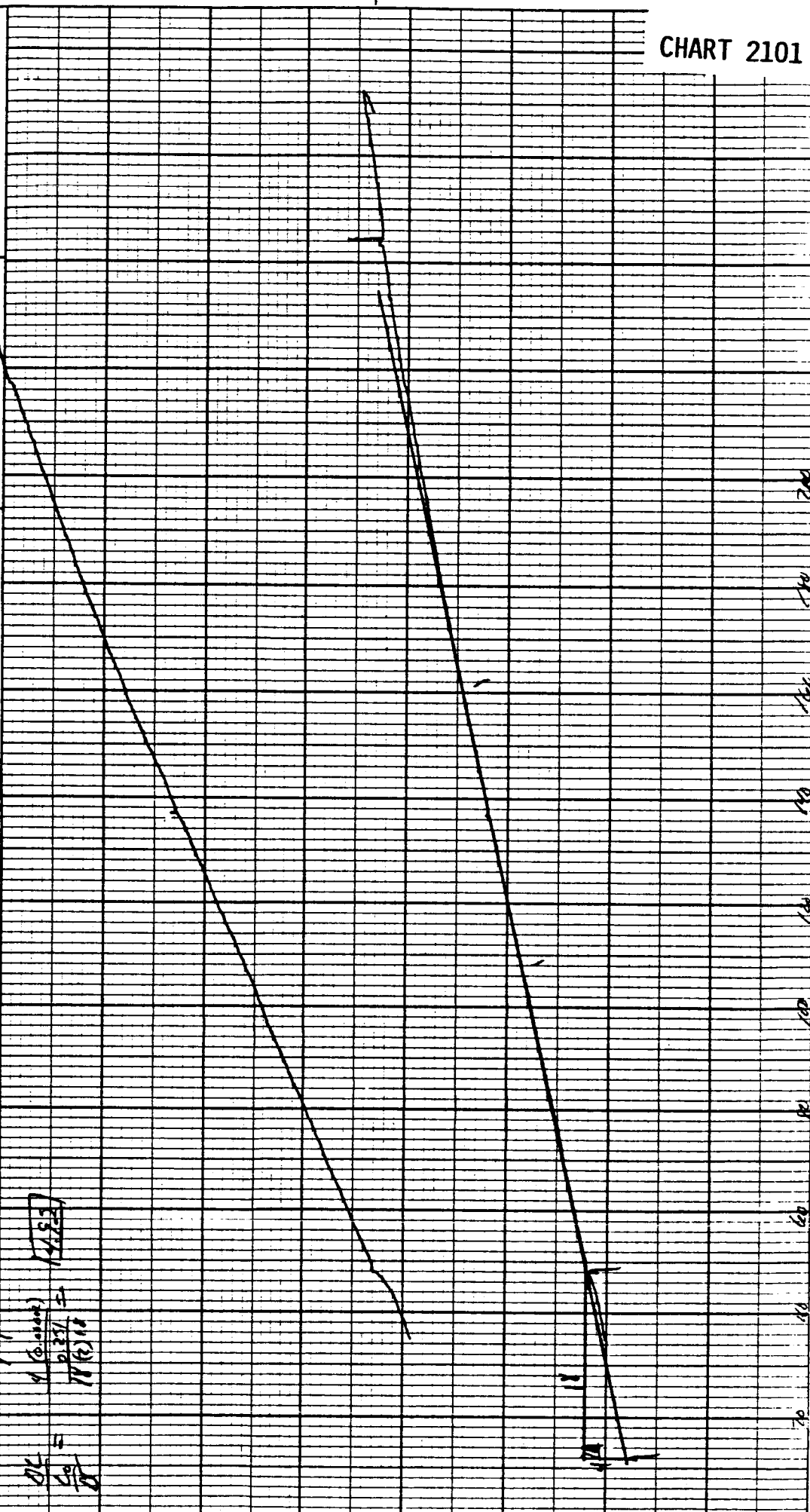
SCALE, mils/in. 0.1/0.2  
 MODE EXTENDED  
 SAMPLE SIZE 0.158  
 LOAD, g 1.0  
 dY, (10X), (mils/min) / in.



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PART NO. 990088

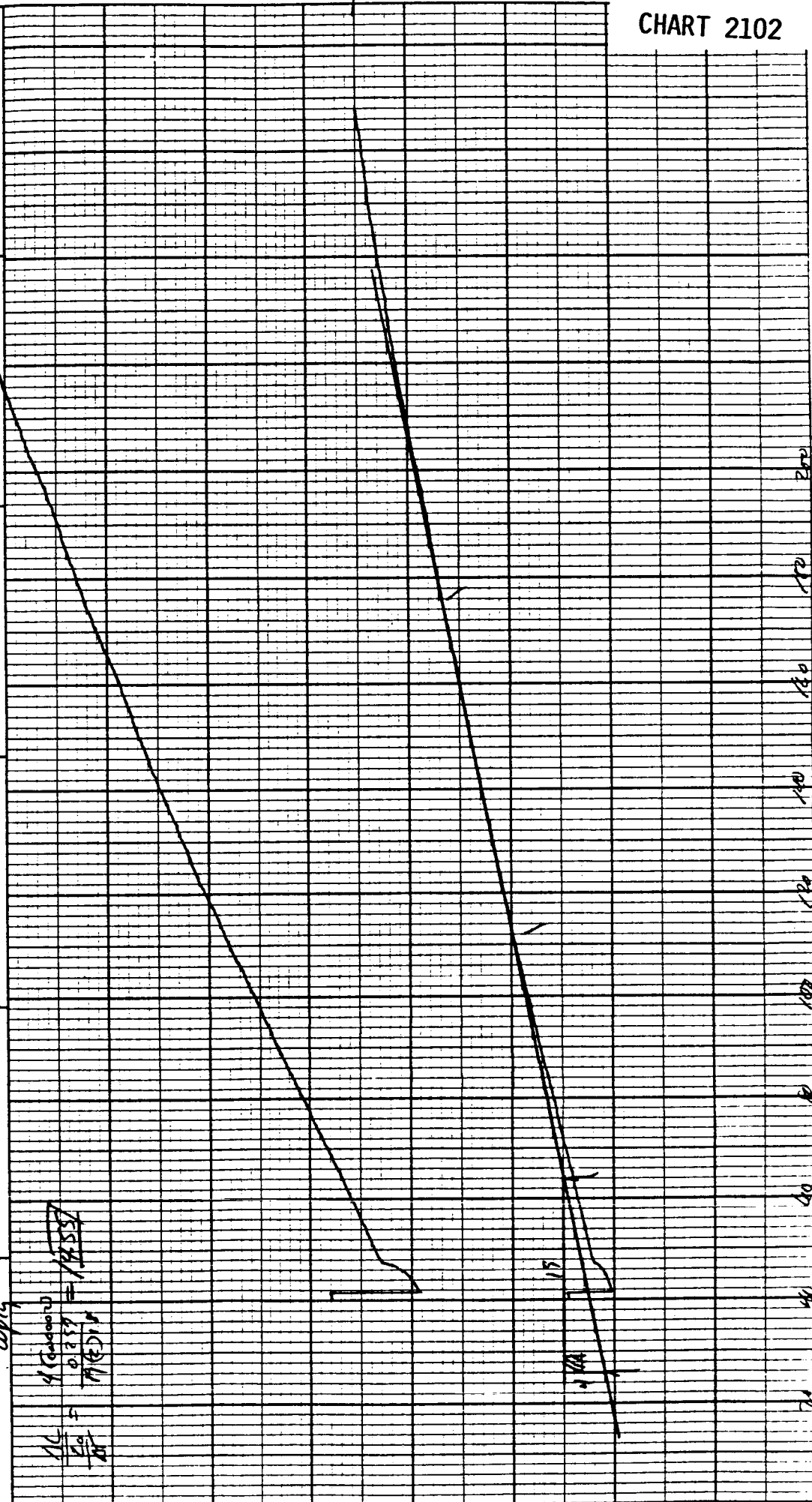
RUN NO. <u>101160</u> OPERATOR <u>TH</u> SAMPLE: <u>D01256 - 8-SYMET (1)</u> ATM <u>Ad</u> @ <u>SP</u> FLOW RATE <u>3.5 LPM</u>	T-AXIS SCALE, °C/in <u>50</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in <u>0</u>	DTA-DSC SCALE, °C/in <u>(mcal/sec)/in</u> WEIGHT, mg REFERENCE	TGA SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min) /in	TMA (mm/in) SCALE, mm/in <u>0.1162</u> MODE <u>EXPANSION</u> SAMPLE SIZE <u>0.251</u> LOAD, g <u>1</u> dY, (10X), (mm/min) /in
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PART NO. 990088

RUN NO. <u>101016</u> OPERATOR <u>TH</u> SAMPLE: <u>D1150-8-STRAT-(2)</u> ATM. <u>200</u> @ <u>500</u> FLOW RATE <u>3.55 LPM</u>	T-AXIS SCALE: °C/in. <u>50</u> 20 PROG. RATE: °C/min <u>10</u> HEAT: <u>COOL</u> ISO SHIFT: in. <u>0</u>	DTA-DSC SCALE: °C/in. <u>50</u> (mcal/sec)/in. WEIGHT, mg REFERENCE	TGA SCALE, mg/in. SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in.	TMA <u>400</u> (in/in) SCALE, mils/in. <u>0.10</u> 20 MODE <u>EXPRESSION</u> SAMPLE SIZE <u>0.257</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in.
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PART NO. 990088

RUN NO. DATE 10/10/94  
 OPERATOR JH  
 SAMPLE: D0116-8-SMART- (3)  
 ATM. 24 @ 170  
 FLOW RATE 2.53 L/min

T-AXIS  
 SCALE, °C/in 20  
 PROG. RATE, °C/min 10  
 HEAT, °C COOL ISO  
 SHIFT, in 0

DTA-DSC  
 SCALE, °C/in  
 (mcal/sec)/in  
 WEIGHT, mg  
 REFERENCE

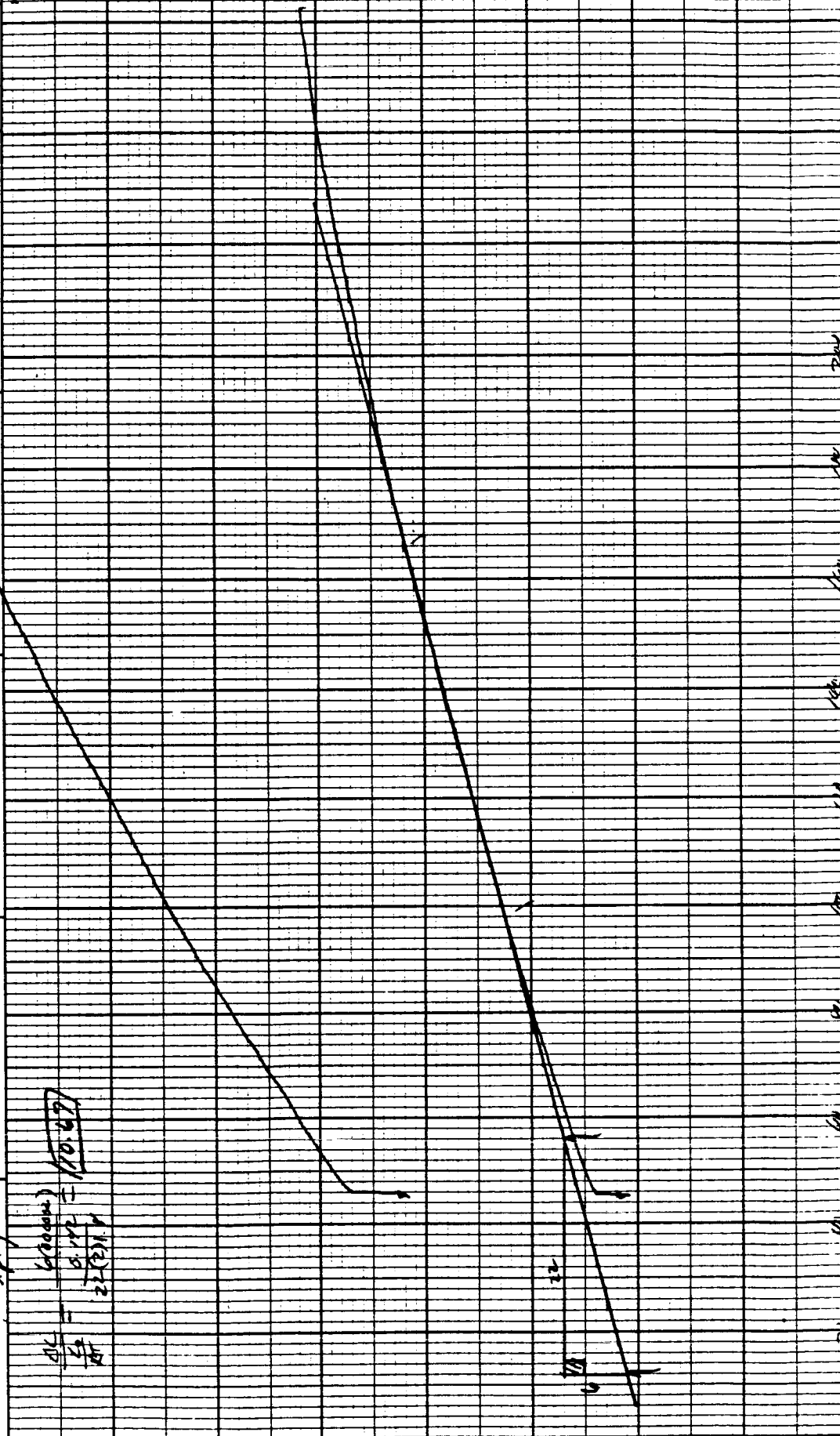
TGA  
 SCALE, mg/in  
 SUPPRESSION, mg  
 WEIGHT, mg  
 TIME CONST., sec  
 dY, (mg/min)/in

TMA (mm/in)  
 SCALE, mm/in 0.1/100  
 MODE Expansion  
 SAMPLE SIZE 0.142  
 LOAD, g 1  
 dY, (10X), (mile/min)/in

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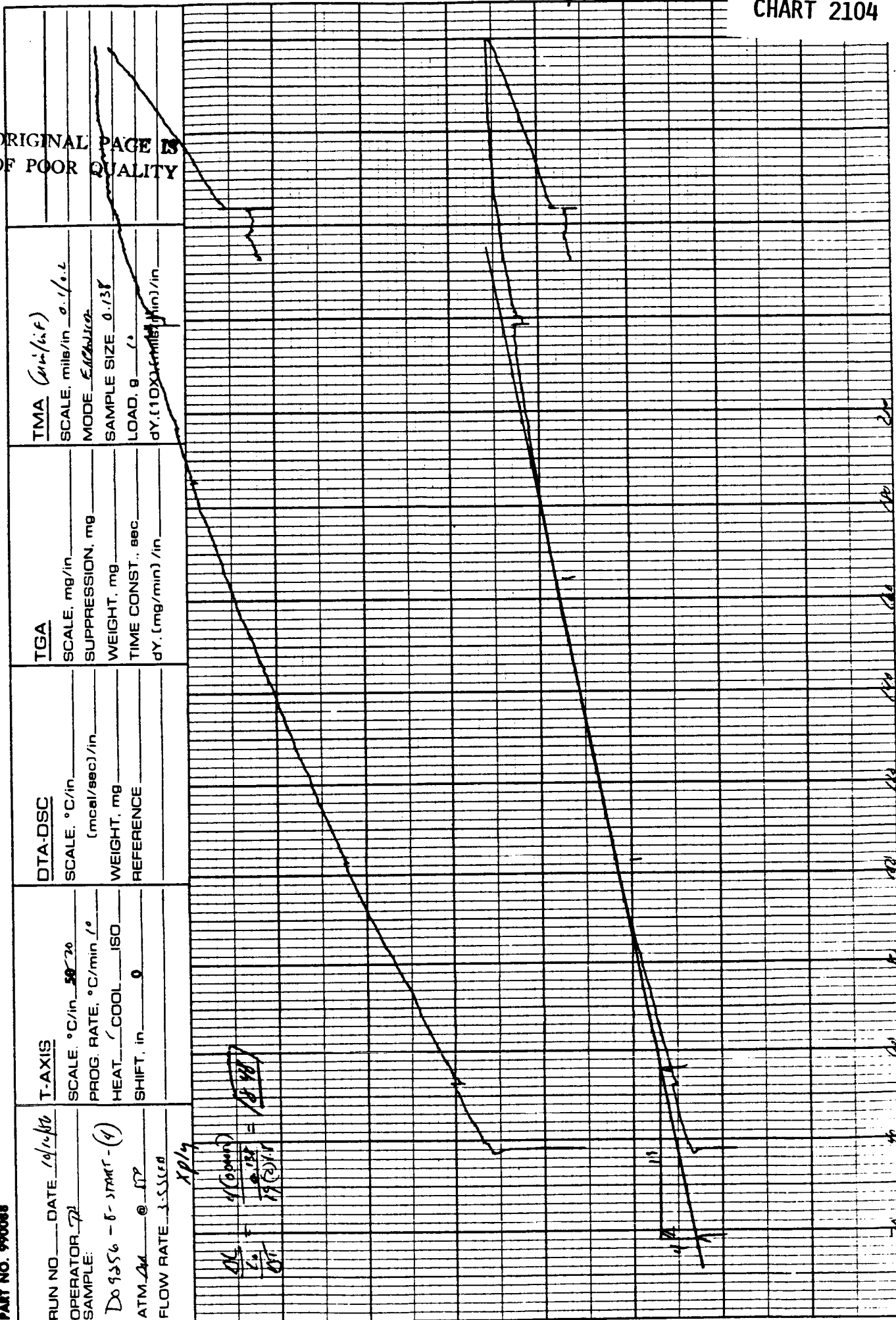
Xp/y

$$\frac{dL}{L} = \frac{600000}{25000} = 24.0$$



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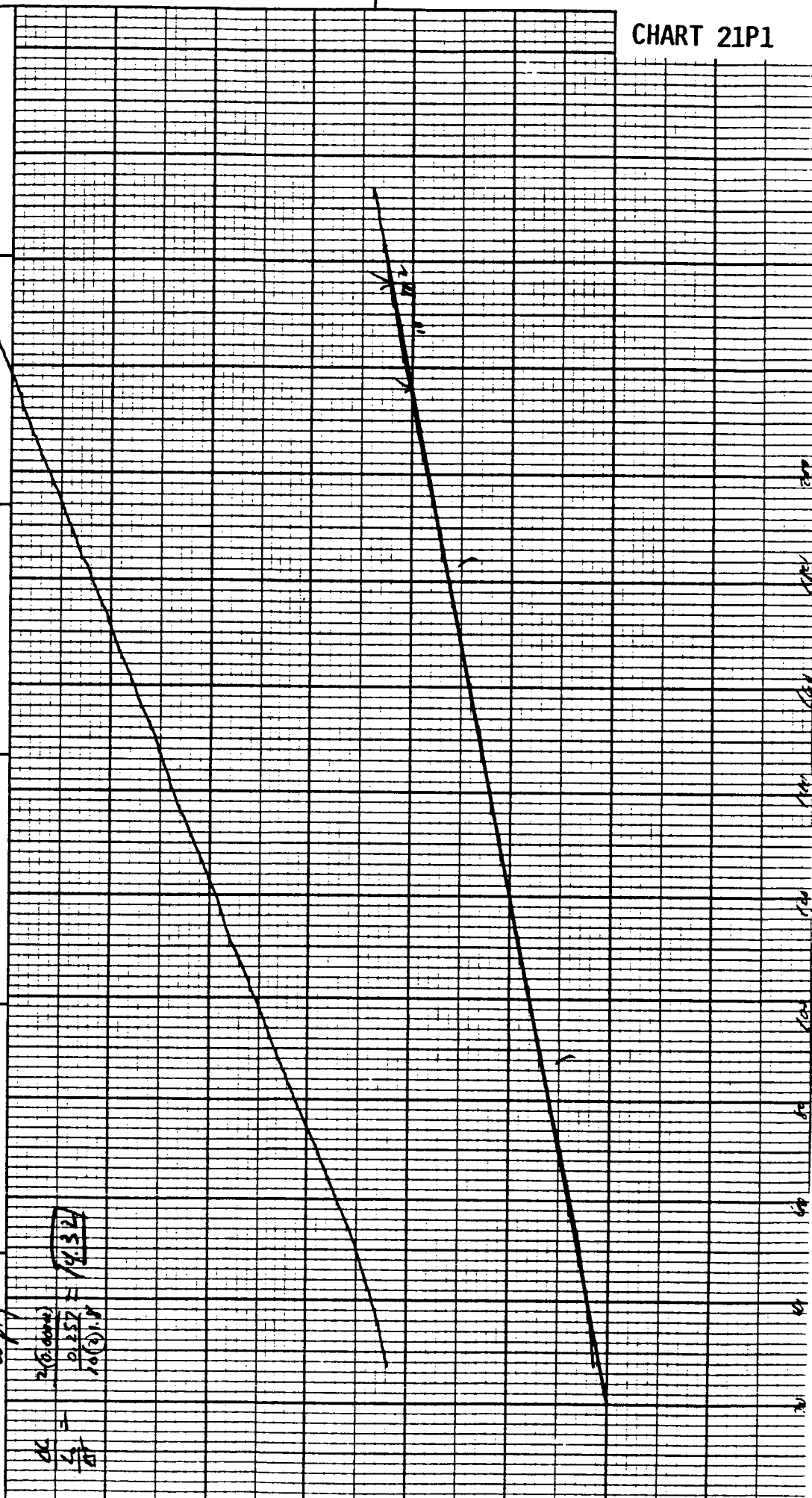
PART NO. 990088



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PART NO. 990088

RUN NO. <u>11/17/84</u> OPERATOR <u>TP</u> SAMPLE: <u>D07256-8-EM-(-1)</u> ATM <u>AA</u> @ <u>STD</u> FLOW RATE <u>3.55 C/d</u>	<u>T-AXIS</u> SCALE, °C/in. <u>50</u> 20 PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	<u>DTA-DSC</u> SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	<u>TGA</u> SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	<u>TMA (mm/min)</u> SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXTRUSION</u> SAMPLE SIZE <u>0.257</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. _____
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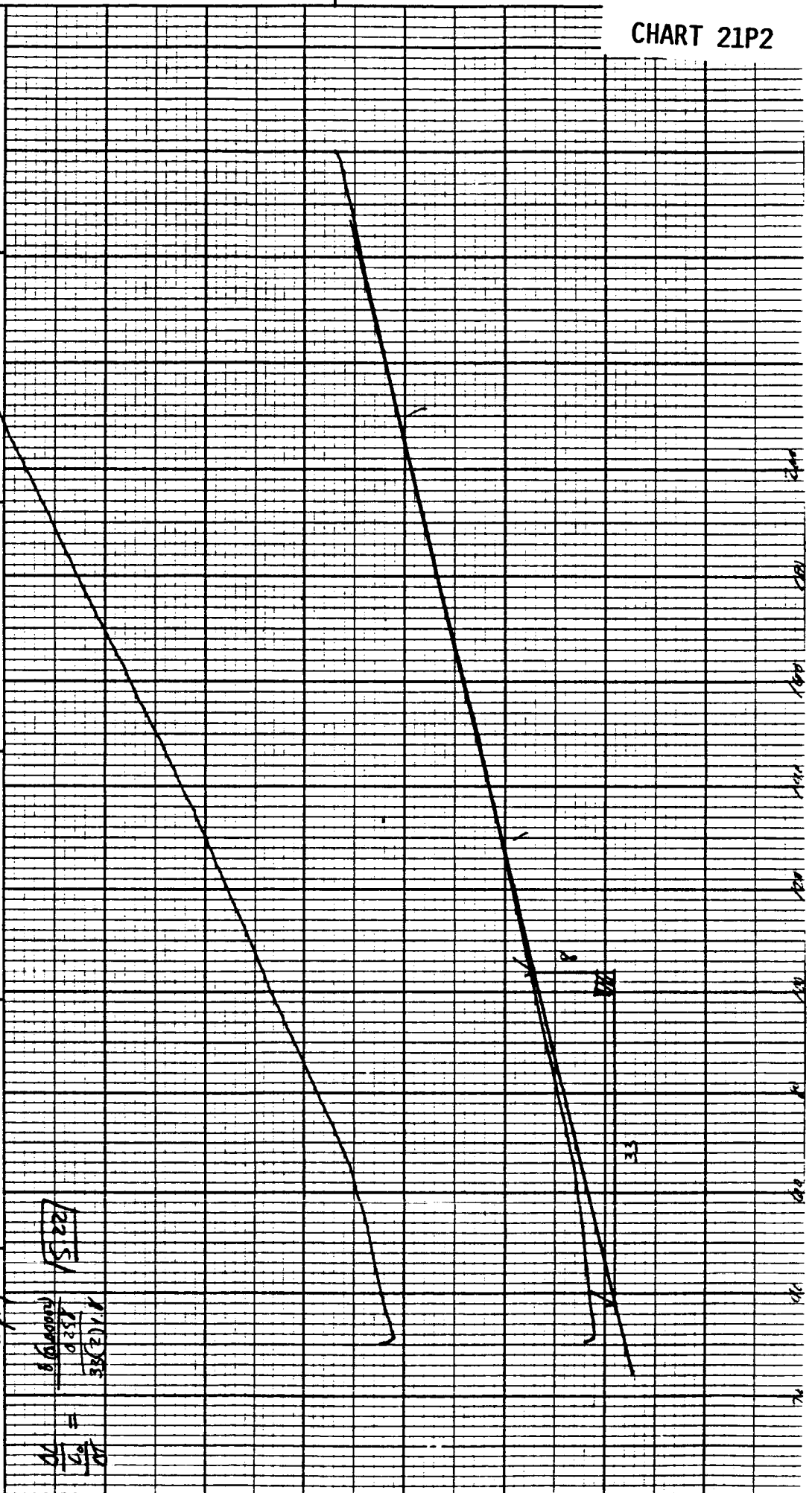


PART NO. 990088

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CHART 21P2

RUN NO. _____ OPERATOR <u>AD</u> SAMPLE: <u>D05256-8-EMP-6</u> ATM. <u>24</u> @ <u>570</u> FLOW RATE <u>3-536 U</u>	T-AXIS SCALE, °C/in. <u>20</u> PROG. RATE, °C/min <u>2</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA (μin/in.°F) SCALE, mils/in. <u>0.012</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.258</u> LOAD, g <u>1</u> dY, (10X) (mils/min)/in. _____
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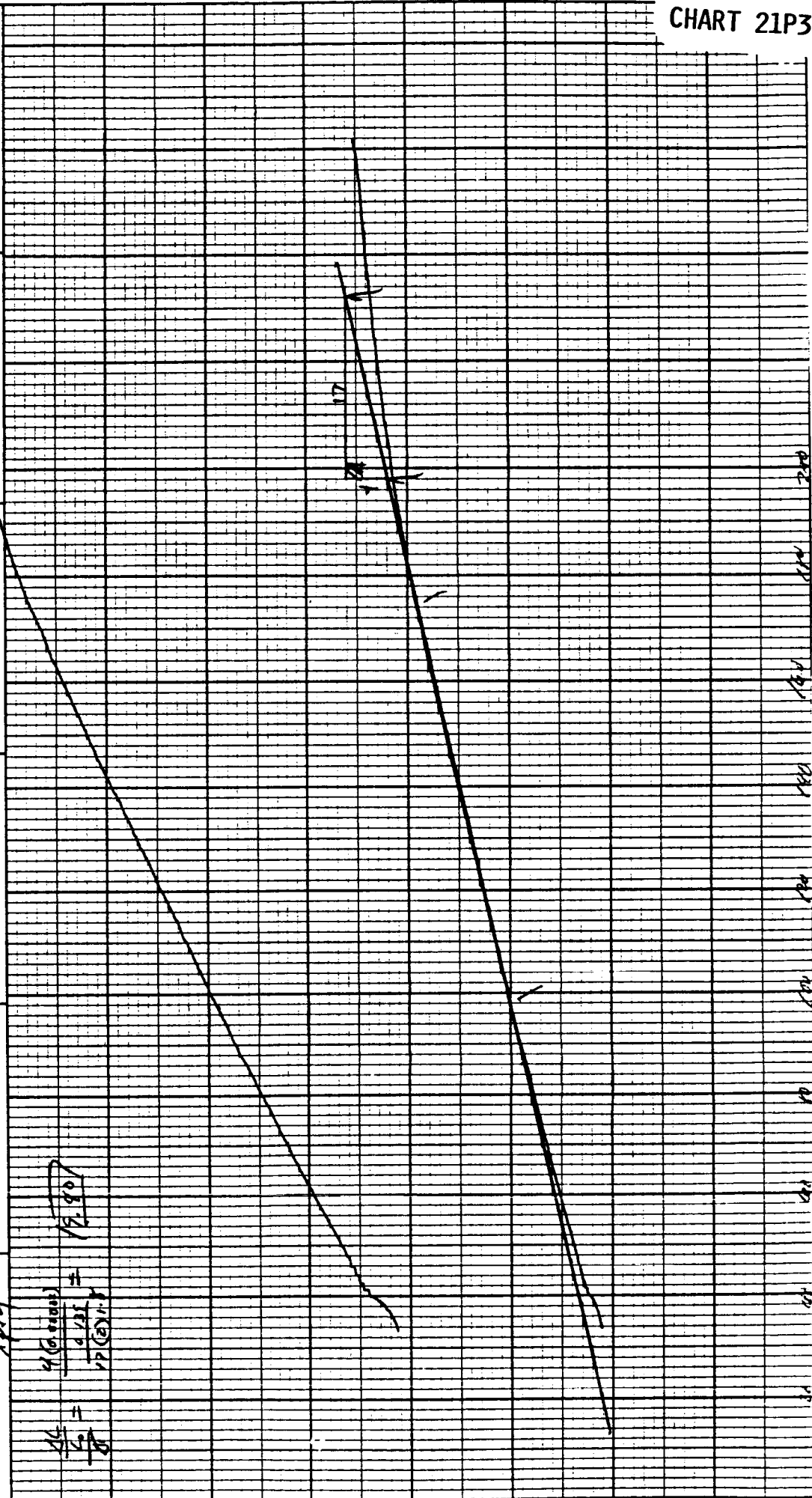


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CHART 21P3

PART NO. 990088

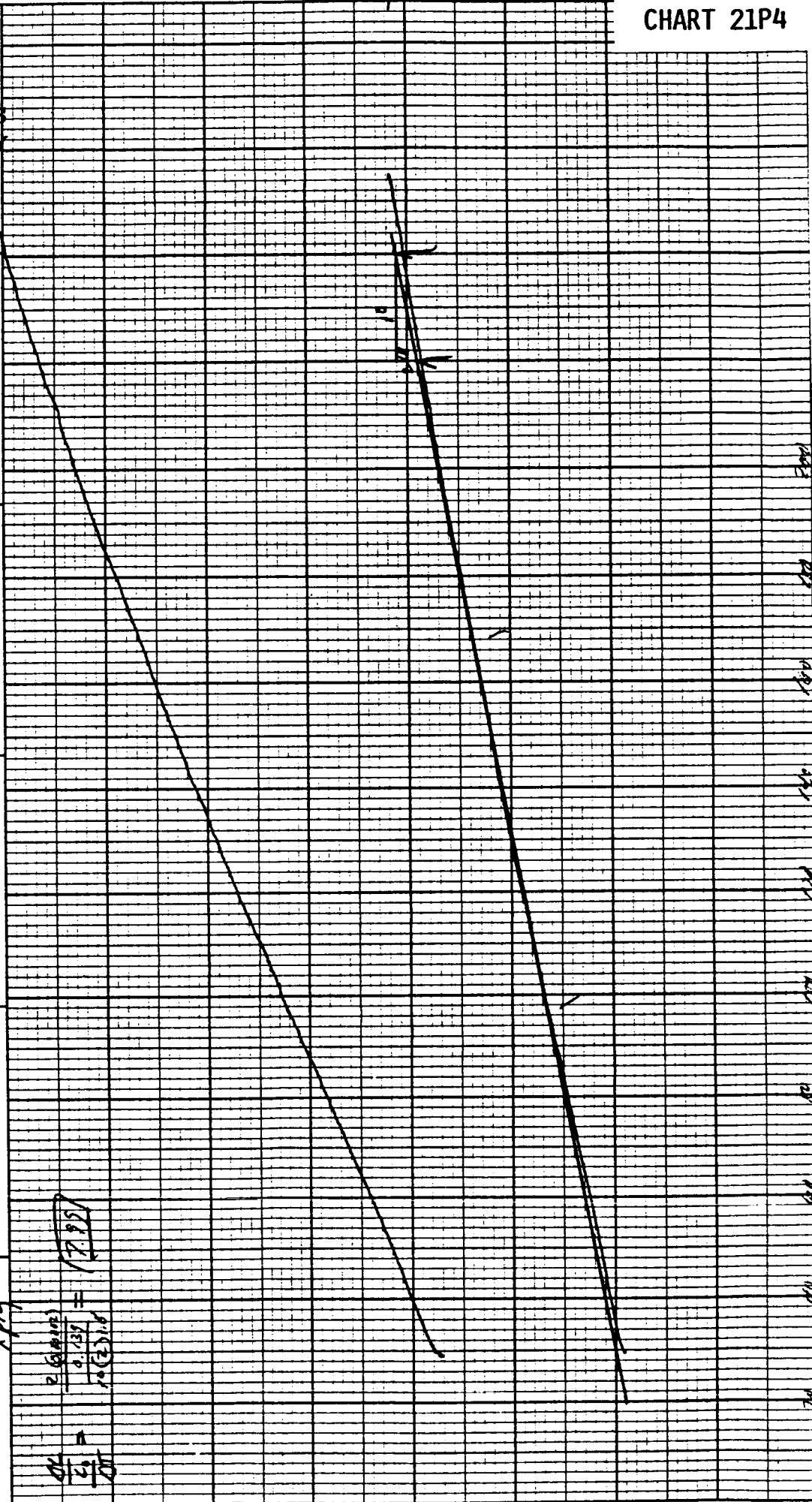
RUN NO. <u>11/1/84</u> OPERATOR <u>SP</u> SAMPLE: <u>DO9256-8-640-(3)</u> ATM <u>PC</u> @ <u>SP</u> FLOW RATE <u>3.564</u>	<u>T-AXIS</u> SCALE, °C/in. <u>20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	<u>DTA-DSC</u> SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg REFERENCE	<u>TGA</u> SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	<u>TMA</u> (μin/in) SCALE, mils/in <u>0.1/0.1</u> MODE <u>EXTRUSION</u> SAMPLE SIZE <u>(1.3)</u> LOAD, g <u>1</u> dY, (10X)(mils/min)/in
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PART NO. 990086

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RUN NO. <u>1111</u> OPERATOR <u>TH</u> SAMPLE <u>Do 9256 - 8 - E2 - (4)</u> ATM <u>420</u> @ <u>51P</u> FLOW RATE <u>2.55 LPM</u>	T-AXIS SCALE, °C/in. <u>50</u> <u>20</u> PROG. RATE, °C/min <u>0</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>50</u> (mcal/sec)/in. WEIGHT, mg REFERENCE	TGA SCALE, mg/in. SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in.	TMA SCALE, mils/in. <u>0.160.2</u> MODE <u>EXTRUSION</u> SAMPLE SIZE <u>0.139</u> LOAD, g <u>11</u> dY, (10X), (mils/min)/in.
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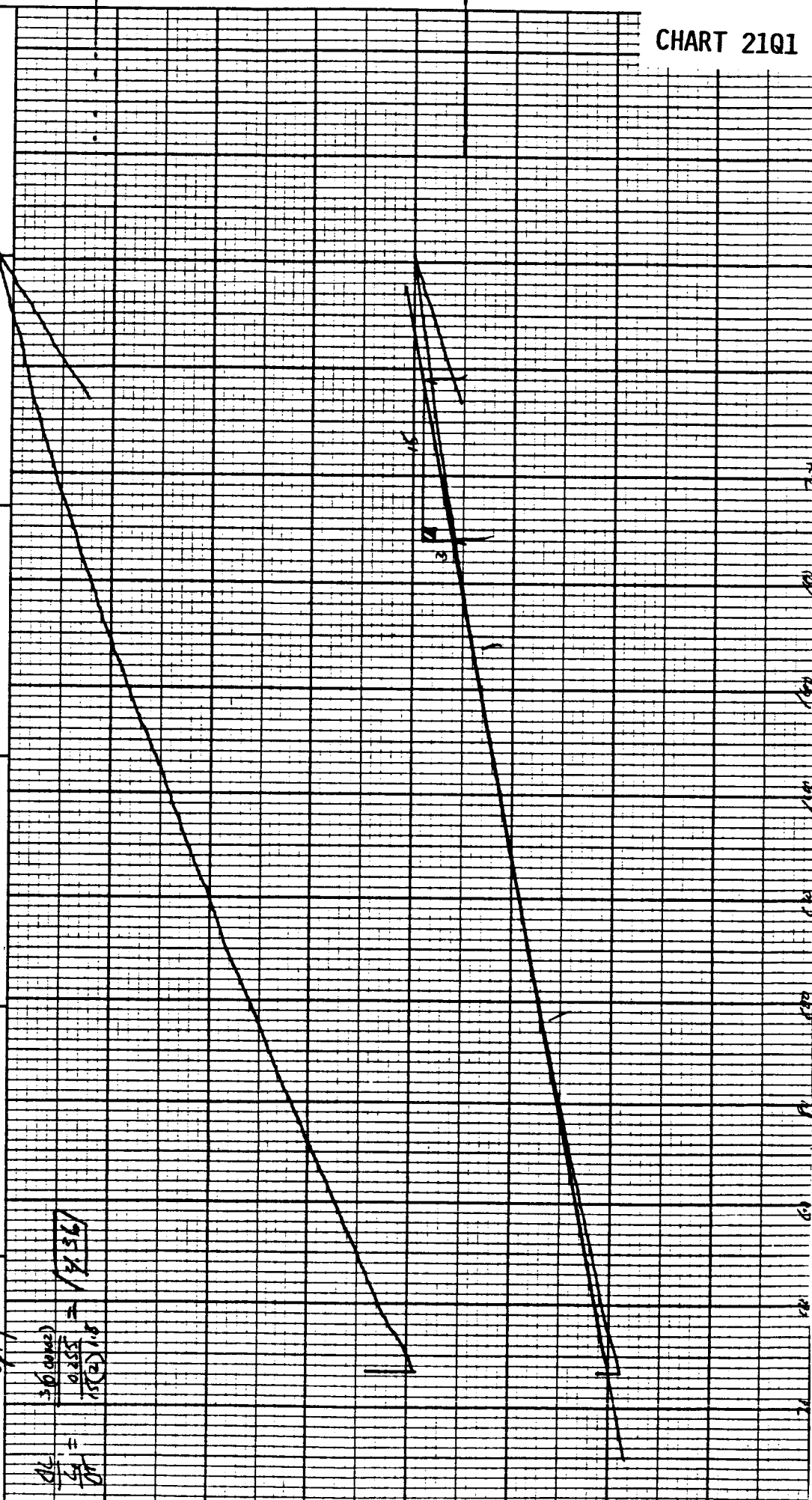


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CHART 21Q1

PART NO. 990088

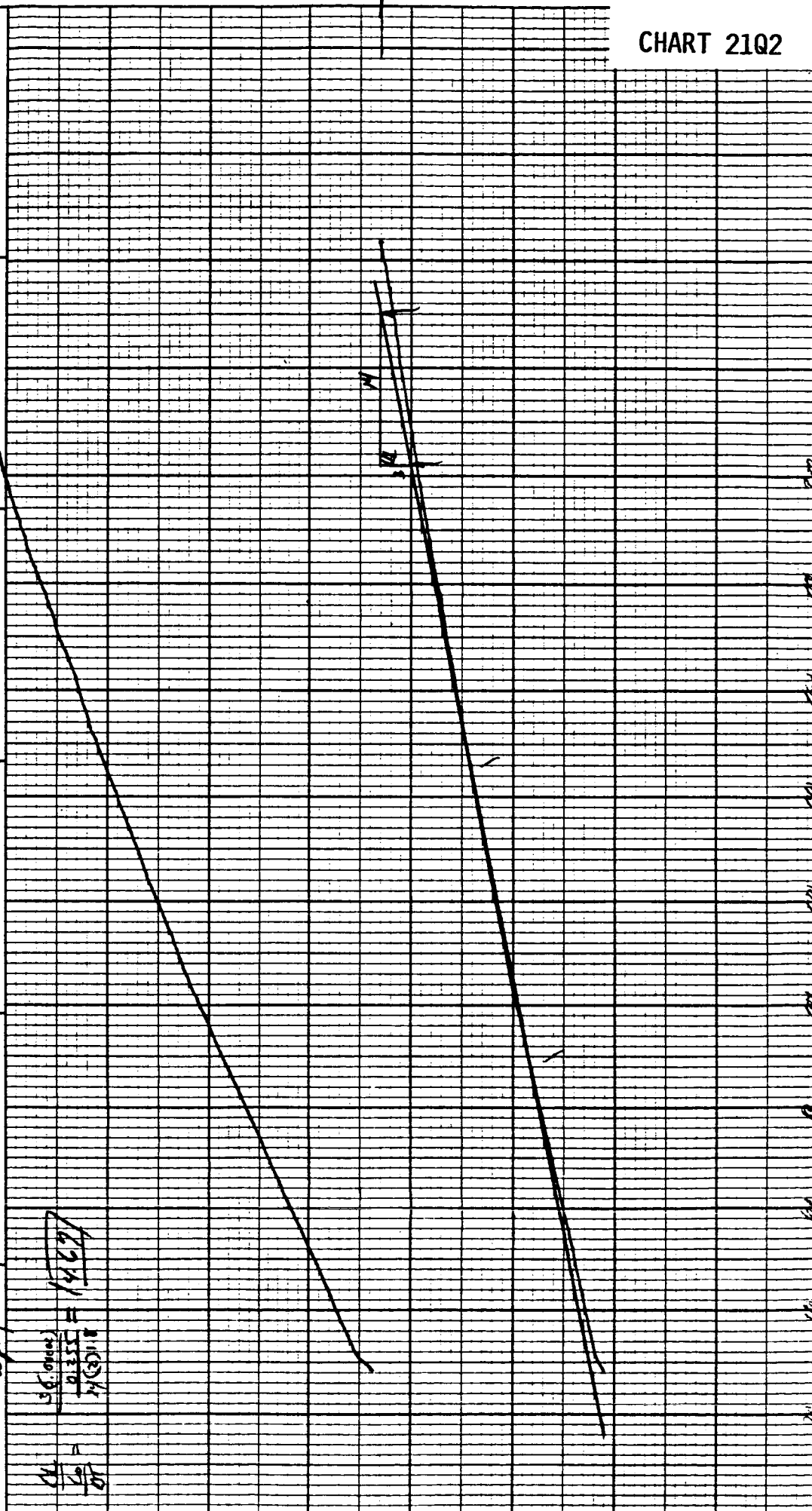
RUN NO. _____ OPERATOR <u>TL</u> SAMPLE: <u>D09556-9-SMPL-6</u> ATM <u>4R</u> @ <u>370</u> FLOW RATE <u>3.5 L/min</u>	T-AXIS SCALE, °C/in. <u>50</u> 20 PROG. RATE, °C/min <u>1</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in _____	TMA (mm/in) SCALE, mm/in <u>0.10</u> MODE <u>EXTENSION</u> SAMPLE SIZE <u>0.25</u> LOAD, g <u>10</u> dY, (10X) (mm/min)/in _____
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PART NO. 990068

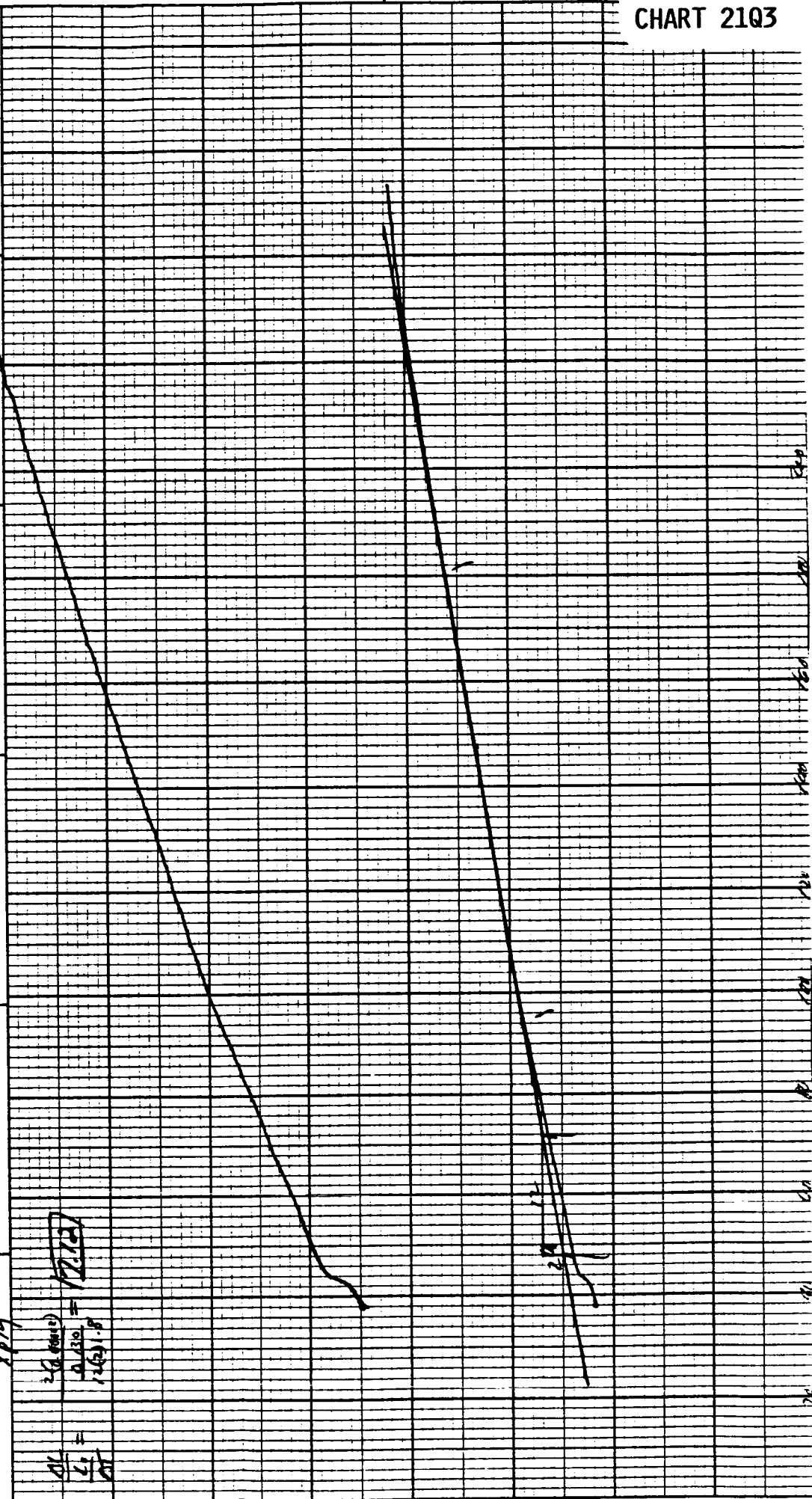
RUN NO. _____ OPERATOR <u>IL</u> SAMPLE: <u>D0116-9-3mm-12</u> ATM. <u>20</u> @ <u>500</u> FLOW RATE <u>1-55LE</u>	T-AXIS SCALE, °C/in. <u>50</u> PROG. RATE, °C/min. <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec. _____ dY, (mg/min)/in. _____	TMA SCALE, mils/in. <u>0.16</u> MODE <u>EXHIBIT</u> SAMPLE SIZE <u>0.255</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in. _____
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PART NO. 990088

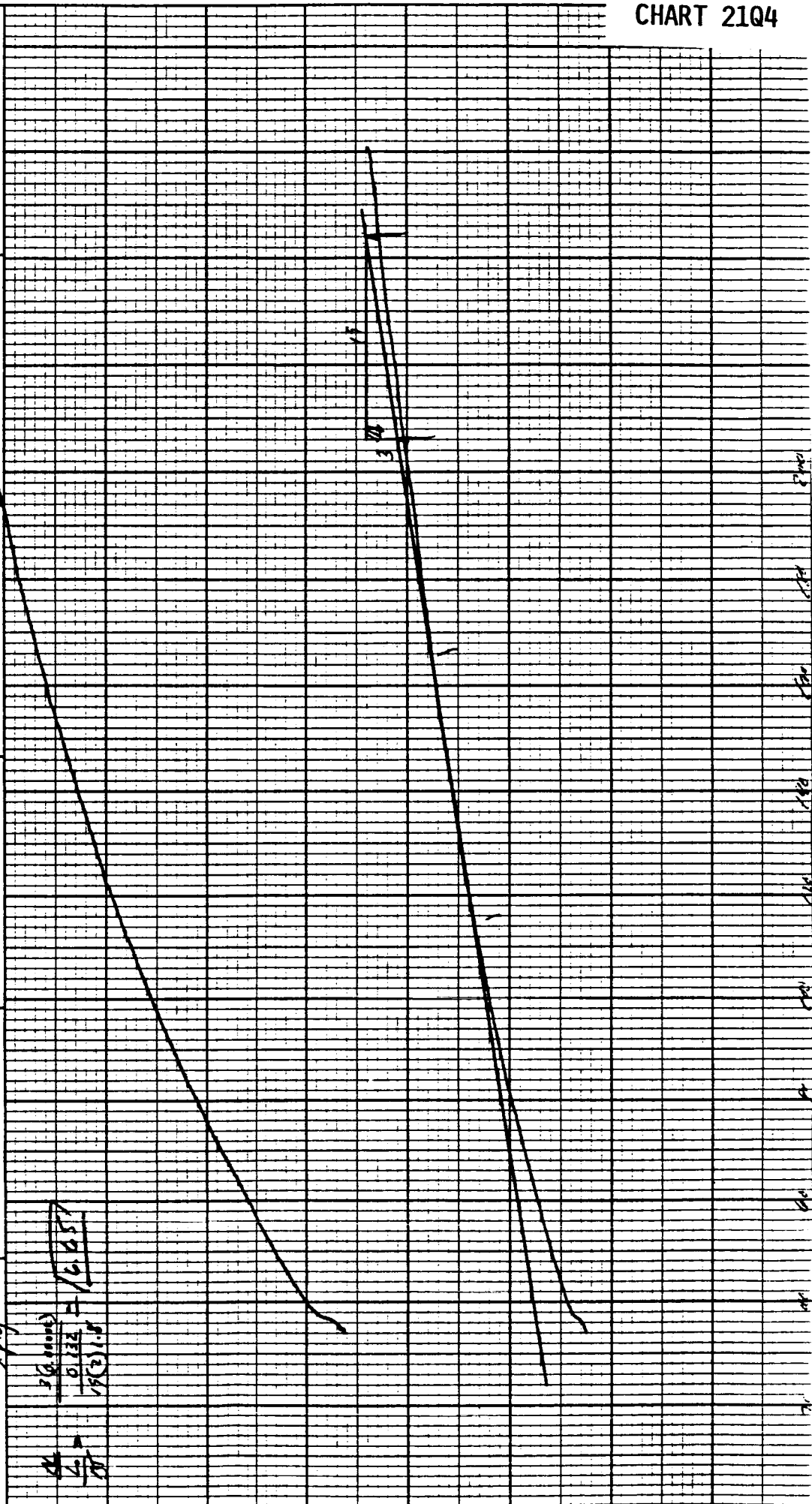
RUN NO. <u>1115</u> OPERATOR <u>DL</u> SAMPLE: <u>D09256-9-57ms(-3)</u> ATM <u>400</u> @ <u>57</u> FLOW RATE <u>3.52 CFH</u>	T-AXIS SCALE, °C/in. <u>50</u> <u>2°</u> PROG. RATE, °C/min <u>1°</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>          </u> (mcal/sec)/in. <u>          </u> WEIGHT, mg <u>          </u> REFERENCE <u>          </u>	TGA SCALE, mg/in. <u>          </u> SUPPRESSION, mg <u>          </u> WEIGHT, mg <u>          </u> TIME CONST., sec <u>          </u> dY, (mg/min)/in. <u>          </u>	TMA (mm/min) SCALE, mm/in. <u>0.1/0.2</u> MODE <u>EXP. PULSED</u> SAMPLE SIZE <u>0.130</u> LOAD, g <u>10</u> dY, (10X), (mm/min)/in. <u>          </u>
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PART NO. 990088

RUN NO. <u>DATE 11/1/84</u> OPERATOR <u>DP</u> SAMPLE: <u>DO9256 - 3- STYRENE - (4)</u> ATM <u>24</u> @ <u>80</u> FLOW RATE <u>3.5 (L/min)</u>	T-AXIS SCALE, °C/in. <u>50</u> <sup>24</sup> PROG. RATE, °C/min <u>10</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>10</u> (mcal/sec)/in. WEIGHT, mg REFERENCE	TGA SCALE, mg/in. SUPPRESSION, mg WEIGHT, mg TIME CONST., sec. dY, (mg/min)/in.	TMA (um/min) SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXTRUSION</u> SAMPLE SIZE <u>0.132</u> LOAD, g <u>10</u> dY, (10X) (mils/min)/in.
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PART NO. 990088

RUN NO. <u>441411</u> OPERATOR <u>714</u> SAMPLE: <u>D69256 - 9-EMD (1)</u> ATM. <u>40</u> @ <u>570</u> FLOW RATE <u>3-55 (F.0)</u>	T-AXIS SCALE, °C/in. <u>50</u> <u>20</u> PROG. RATE, °C/min <u>20</u> HEAT <u>COOL</u> ISO SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec _____ dY, (mg/min)/in. _____	TMA (g/in./in. <sup>2</sup> ) SCALE, mils/in. <u>0.1</u> <u>1.2</u> MODE <u>EXTRUSION</u> SAMPLE SIZE <u>0.25</u> LOAD, g <u>20</u> dY, (10X), (mils/min)/in. _____
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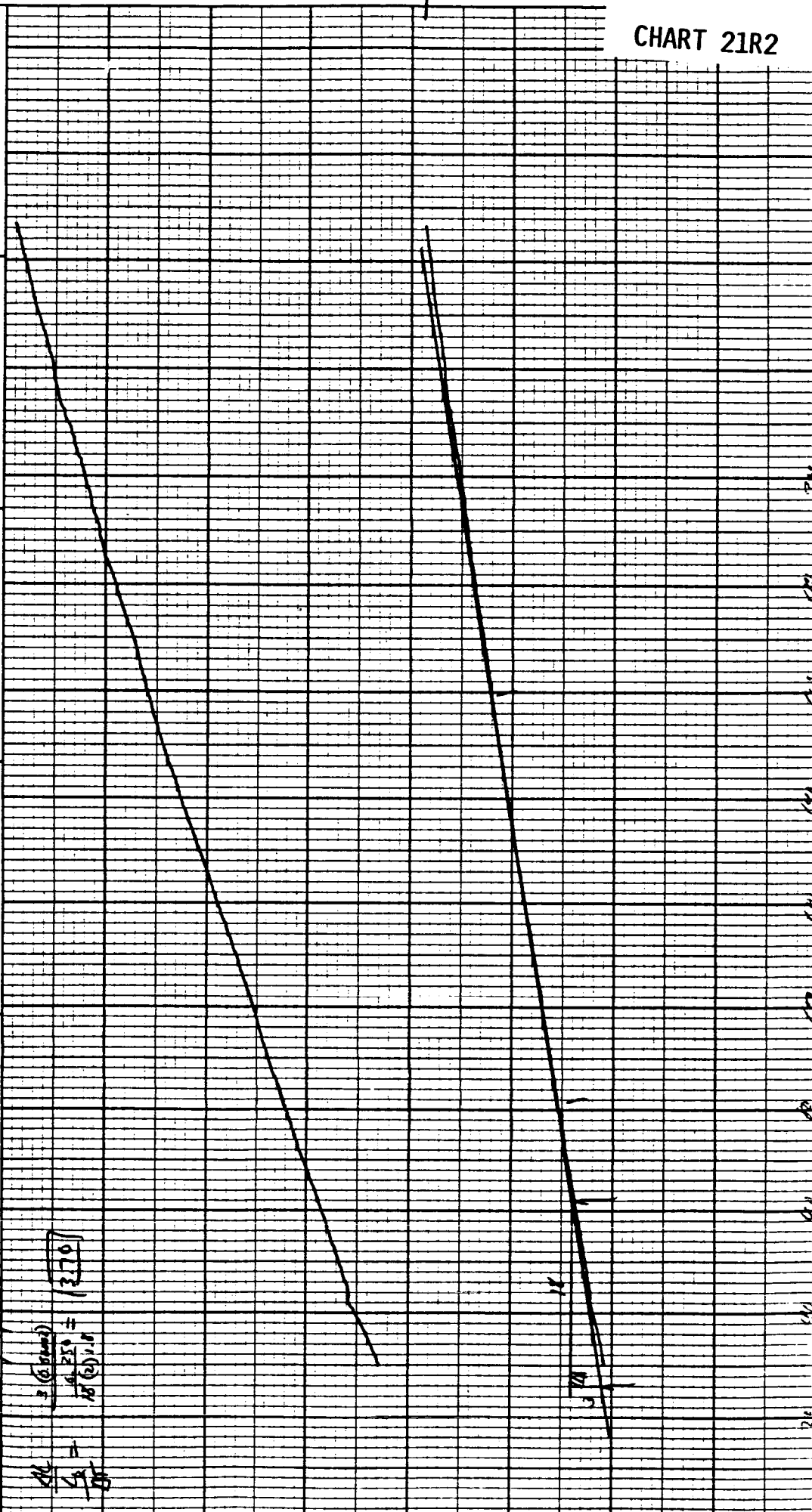


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CHART 21R2

PART NO. 990088

RUN NO. <u>110186</u> OPERATOR <u>AD</u> SAMPLE: <u>D05256 - 3-FA-6</u> ATM. <u>CR</u> @ <u>578</u> FLOW RATE <u>2-53614</u>	<u>T-AXIS</u> SCALE: °C/in <u>50/20</u> PROG. RATE: °C/min <u>20</u> HEAT <u>COOL</u> ISO SHIFT. in <u>0</u>	<u>DTA-DSC</u> SCALE: °C/in (mcal/sec)/in WEIGHT, mg REFERENCE	<u>TGA</u> SCALE, mg/in SUPPRESSION, mg WEIGHT, mg TIME CONST., sec dY, (mg/min)/in	<u>TMA</u> (µin/in) SCALE, mils/in <u>0.1/0.2</u> MODE <u>ELASTIC</u> SAMPLE SIZE <u>0.250</u> LOAD, g <u>10</u> dY, (10X), (mils/min)/in
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PART NO. 990088

RUN NO. <u>10</u> OPERATOR <u>JD</u> SAMPLE: <u>D9256-9-16W-(3)</u> ATM. <u>40</u> @ <u>578</u> FLOW RATE <u>3.535 L/h</u>	T-AXIS SCALE, °C/in. <u>50-20</u> PROG. RATE, °C/min <u>10</u> HEAT <u>✓</u> COOL <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. <u>(mcal/sec)/in</u> WEIGHT, mg <u>---</u> REFERENCE <u>---</u>	TGA SCALE, mg/in. <u>---</u> SUPPRESSION, mg <u>---</u> WEIGHT, mg <u>---</u> TIME CONST., sec <u>---</u> dY, (mg/min) /in <u>---</u>	TMA SCALE, mils/in. <u>0.1/0.2</u> MODE <u>EXPAN/CON</u> SAMPLE SIZE, g. <u>46</u> LOAD, g. <u>20</u> dY, (10X), (mils/min) /in <u>---</u>
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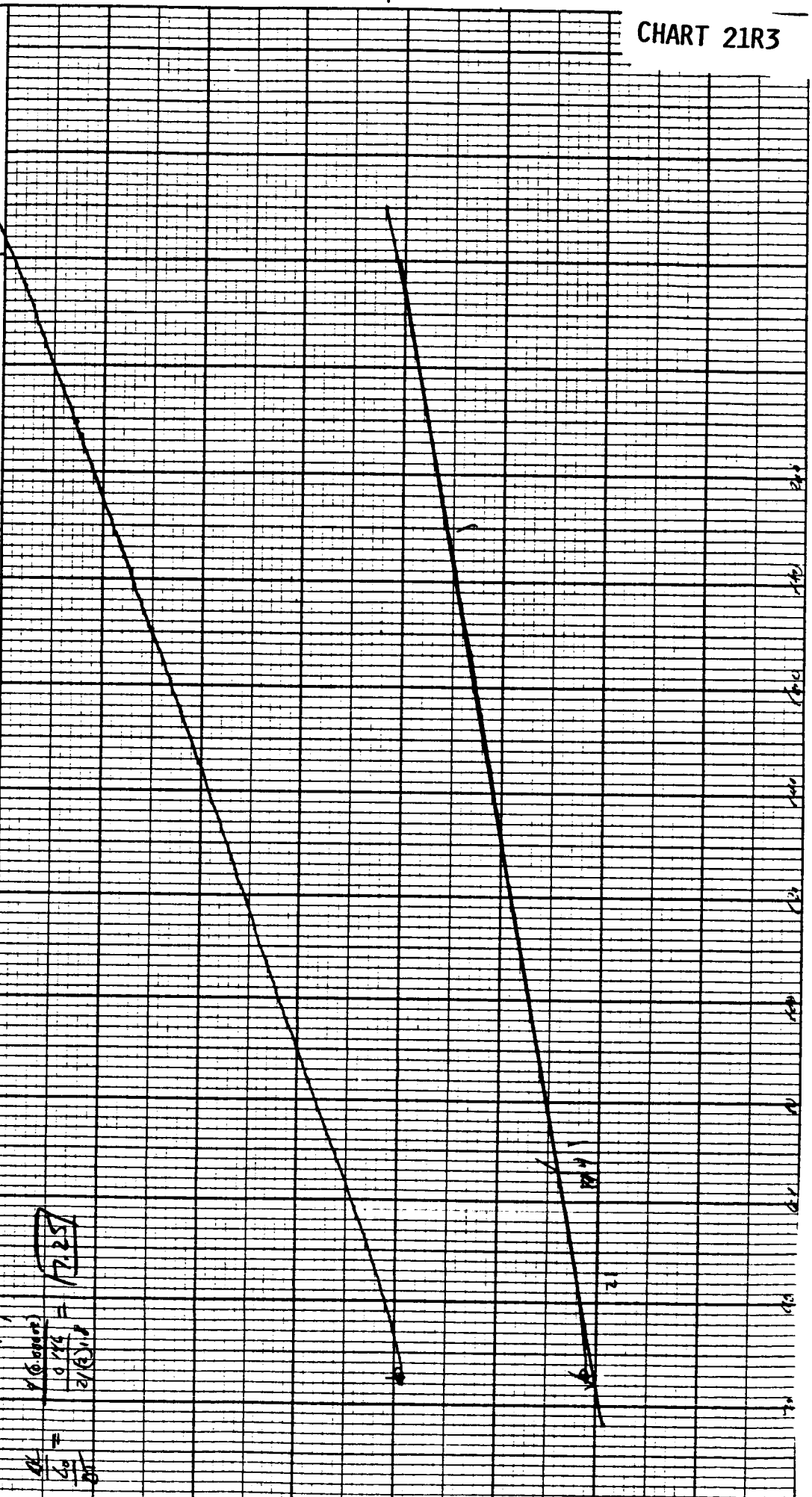


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PART NO. 990088

RUN NO. _____ OPERATOR <u>LD</u> SAMPLE: <u>D09246-9-END-(4)</u> ATM. <u>60</u> @ <u>500</u> FLOW RATE <u>2-1100</u>	T-AXIS SCALE, °C/in. <u>50/20</u> PROG. RATE, °C/min. <u>10</u> HEAT. / COOL. <u>ISO</u> SHIFT, in. <u>0</u>	DTA-DSC SCALE, °C/in. _____ (mcal/sec)/in. _____ WEIGHT, mg _____ REFERENCE _____	TGA SCALE, mg/in. _____ SUPPRESSION, mg _____ WEIGHT, mg _____ TIME CONST., sec. _____ dY, (mg/min)/in. _____	TMA <u>(in/in)</u> SCALE, mils/in. <u>air</u> MODE <u>EX/200</u> SAMPLE SIZE <u>0.145</u> LOAD, g <u>1</u> dY, (10X), (mils/min)/in. _____
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